

# Progressive Architecture

February 1978 A Penton/IPC Reinhold Publication



**How to put a room in the right light  
for 40% less energy—at only 1.84 watts/ft<sup>2</sup>**



Responding to a need to conserve energy while maintaining effective illumination, the Armstrong C-60 Ceiling System delivers handsomely. It provides lighting of a quality superior to that of a widely accepted 4-lamp 2' x 4' troffer installation but uses 40% less energy year after year.


The performance comparison shown below is keyed to the growing recognition that the classical footcandle is an incomplete measure of lighting effectiveness. In practical office situations, light rays strike the work surface from many angles. At any given point, some fixtures are providing high-quality illumination without glare. But other fixtures are projecting light at bad angles, producing "veiling reflections" that hinder the visual task instead of aiding it.

Classical footcandles measure only the amount of light reaching a point without attempting to identify how much of it is really useful. But there is a more sophisticated measure of lighting efficiency that does. Called Equivalent

Sphere Illumination (ESI), it determines the *quality* as well as the quantity of light being supplied. It far more precisely measures how well the viewer can see what he is doing in every square foot of a specific room for a specific type of visual task.

With just one lamp per five-foot-square coffered module, the Armstrong C-60 assembly provides ESI levels greater than the conventional 4-lamp troffer arrangement but uses far less wattage.

A brief comparison of the two systems is shown in the table below. That data is part of our informative new "Light Wars" show. "Light Wars" is a highly entertaining 30-minute program that includes a filmed explanation of ESI and documents how the C-60 System, in a 100,000-square-foot installation, can save as much as \$29,000 per year at today's energy costs. To see "Light Wars," or receive a free booklet on ESI and the C-60 Ceiling System, mail the coupon below.

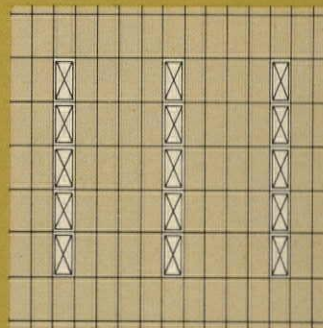
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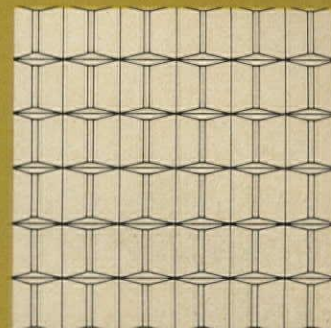
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### Systems Performance Comparison\*



2'x4' Recessed Troffer



Armstrong C-60 Luminaire

Fixture		
Prismatic	lens	Prismatic
4	lamps/fixture	1
15	no. of fixtures	36
classical footcandles		
127	initial	90
95	maintained	70
40	ESI level	44
3.07	watts/sq. ft.	1.84

\*30'x30'x9' room; task—ESI pencil. All test data was supplied by independent laboratories; complete information available on request.

Armstrong  
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Lancaster, PA 17604

\_\_\_\_ Yes, I would like to see your 30-minute "Light Wars" presentation. Please call for an appointment. Phone: \_\_\_\_\_

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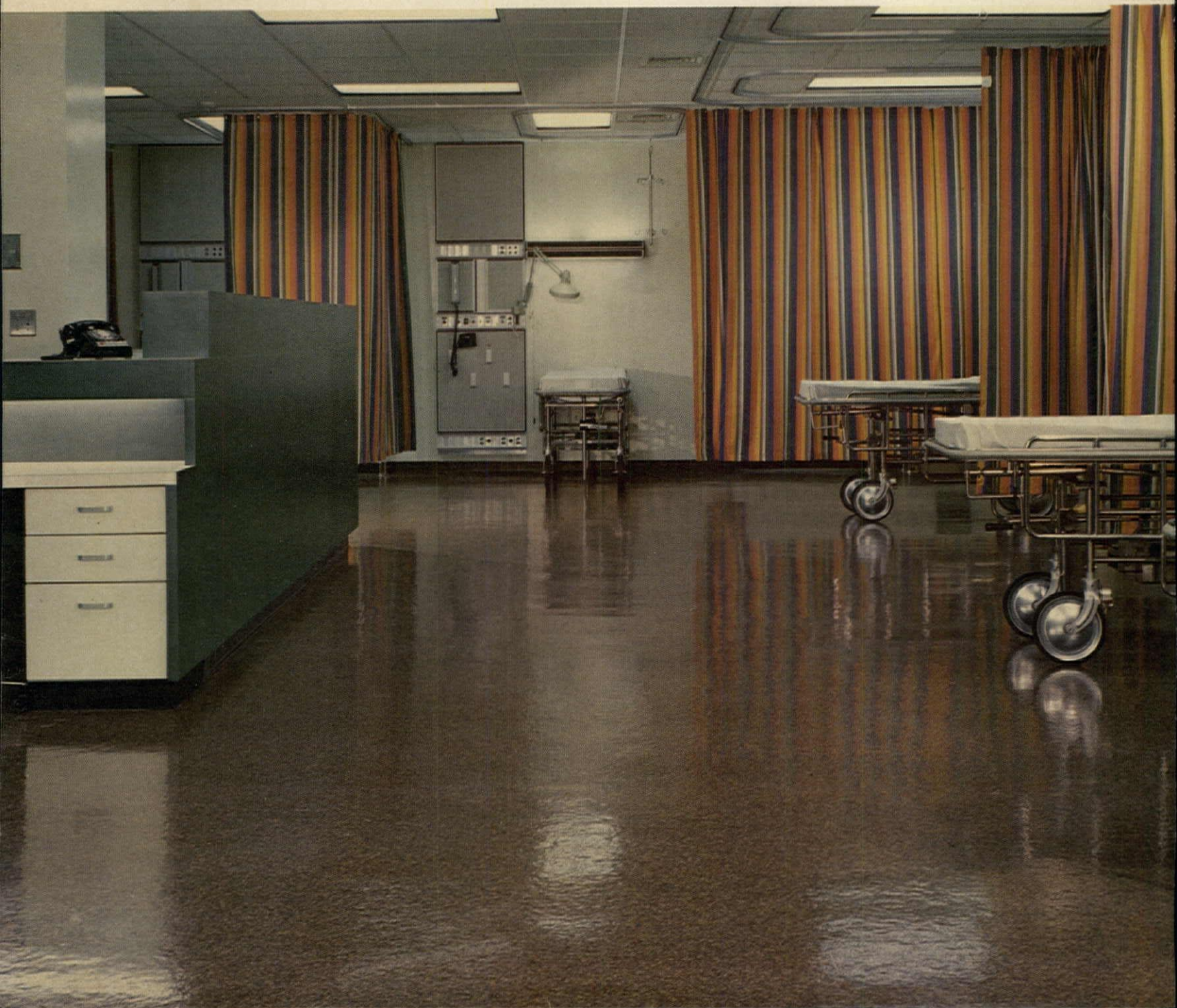
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Flooring Contractor: Bloom South & Gurney, Boston, MA



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**Cover:** Los Angeles Bonaventure Hotel and Shopping Gallery, Los Angeles, Ca (p. 52). Photo: Wayne Thom.






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# Equal opportunity for the handicapped

February 1978

Handicaps are created by design. In the parlance of those seeking to make our buildings "barrier-free," the beneficiaries will be people "disabled" by various conditions, permanent and temporary. But these people are "handicapped" only by the environments we create—by stairs and curbs, by doors they cannot operate or pass through in a wheelchair, by inadequate grab bars, by water faucets or elevator buttons out of their reach, and (for the blind) a lack of nonvisual guides for movement.

As in other cases of unequal opportunity—based on race, sex, or poverty—it now seems unthinkable that society went on erecting and maintaining barriers to these people throughout most of human history. The painful fact is that up until about 20 years ago, the disabled were expected to "know their place" just as surely as blacks had been in a white man's world, though their places differed. The severely disabled were relegated either to special institutions or to a home life utterly dependent on able-bodied relatives.

Back in the 1930s, there were a few disabled heroes, such as Helen Keller and Franklin D. Roosevelt; they led active, productive lives, but physically they relied totally on others. Even then, much progress was being made in instructing the blind and their guide dogs, and in teaching the deaf to speak; these groups were gaining some freedom, if not much opportunity. At the same time, there was progress in physical therapy, especially for those stricken by massive epidemics of polio; a large portion of those who were not fatally weakened by the disease learned to walk again, if only with difficulty, thus overcoming much of their "handicap" to education and wage-earning.

But the wars of the 1940s and 1950s, combined with improved medical treatment for the injured (including increasing numbers of accident victims, as well) yielded a large population of severely disabled people who were young, not weakened by disease, and unwilling to endure long lives of cloistered idleness. These are the people, by and large, who began to insist on a right to active, independent lives despite their disabilities.

The impediments to a full life for these people are, in fact, largely *architectural*; they are built into the physical

environments we have been constructing for thousands of years—a legacy we can supplement and modify, but never totally replace. It took an enormous social effort to remove "whites only" from restrooms and water fountains, but making them available to the physically disabled will take physical and economic efforts as well.

We would be foolish not to recognize a social barrier here, as well. Even though any of us could join the ranks of the permanently disabled this very day, the able-bodied majority is not really eager to accept the victims back into their midst; they are, after all, bound to need *some* special consideration, they remind us of our vulnerability, and we may tend therefore to exaggerate the difficulty of accommodating them.

The disabled have now succeeded in having their just rights recognized through legislation at federal and state levels, and the arduous process of definition and compliance is now underway. The elimination of barriers will be largely up to architects, with support from other design professionals. This is a *design* problem, not simply a matter of plugging in the right hardware; the utmost effectiveness and economy can be achieved only by considerations that are integral to the design of buildings, interiors, and outdoor spaces.

To give architectural professionals the basic orientation they need to design barrier-free environments—to respond to the growing body of law, to make the best use of the numerous reference works in this area, and to understand design possibilities that go beyond laws or guidelines—P/A is putting out a special issue in April on the fundamentals of barrier-free design and some notable efforts to apply them, and we are sponsoring a series of seminars in five major cities (see p. 112 for details) at which participants will benefit from face-to-face contact with experts on this crucial subject. We hope we will be able to help you do your part in bringing down the barriers.

*John Morris Dipert*

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Clorox National Headquarters Bldg.  
and Wells Fargo Bank Bldg.  
Oakland, California  
Architect: Gruen Associates

## Letters from readers

# Views

### Preservation constituency

I would like to make some points about your "News Report—In Perspective" column in the November 1977 P/A (p. 31). I am familiar with one of the projects described in the column, the Newburyport renewal, and my recollection of the thing differs significantly from your account. As I recall, during the 1950s and 1960s, the mayor and city government—duly elected by a fair majority of the local citizens—developed a perfectly awful redevelopment plan to reverse the century-long deterioration of the downtown area. Apparently impressed by the success of nearby shopping centers, they decided to do something similar in their city: bulldoze much of downtown, put in a lot of parking, and attract low-priced department stores, fast food chains, supermarkets, and the like. There was reasonable publicity given the idea and no significant opposition. No body was bulldozed.

However, as the wreckers started to work, a significant thing happened: Route I-95 was completed, allowing an affluent few to live in the attractive setting of Boston's far north shore and commute to the city. Bright young professionals for the most part, these few newcomers were damned if they were going to allow any egregious fool of a mayor to spoil their city. The entire group—numbering about 13 at first—would attend meeting after meeting and howl down the mayor and members of the planning board; they claimed to represent "the people"; they argued and delayed; specifically, they brought up points of order and even law suits based on pre-Revolutionary easements allowing public access to a pre-Revolutionary waterfront, they introduced motions, they called for further study. The bewildered mayor, clearly out of his league, was often heard to ask, "Who are these people?" Eventually, they overcame, and the project was scrapped. However, it was not by the "citizen protest" described in P/A, not as I would use the term.

The upshot is this: Newburyport has a trendy, flossy historic downtown ("fancy-pants," as one planning board member from a neighboring community termed it). There is (or was) some money to help with home improvement in the immediate area. It was created by a small group of utterly unscrupulous, undemocratic elitists for their own purposes by wrenching control from the legitimate leaders of the community. There are no large, open parking lots, no tacky department stores or supermarkets to serve the needs of the vast bulk of the community. Incidentally, several artists and artisans who worked very hard for the newcomers' plan found themselves unable to afford the attractive new boutiques once completed. Newburyport's renewal is, then, a case of good design for the elite versus service for the masses. I have seen many cases of this, but none so clear. It is a pity that P/A had no word to say about the other side of the issue.

One further item that bothers me a great deal. The people who controlled and carried out the

Newburyport renewal seem to be identical in all important respects to the "design teams" that brought us such fiascos as the slum clearance and urban renewal of only a few years ago which destroyed so many neighborhoods. I see the same God-with-us attitude, the same impatience with opposition, and so on. Besides being unfair, could they also be wrong?

Samuel S. Hurd

Architectural student

Boston Architectural Center  
Cambridge, Ma.

### Omission

We sincerely regret the inadvertent omission of the Rohm and Haas Company from our acknowledgements in the article "Rays of hope," December 1977, pp. 70-79. As originators of the S-U-N computer program mentioned in the article, Rohm and Haas was certainly one of our most helpful contributors. [Editors]

### Mistaken identity

In the article on the National Permanent Building in Washington, DC, (P/A, Dec. 1977, p. 55) both the tenants and the designers of the office interior illustrated were incorrectly identified. The office shown is part of the floor occupied by the law offices of Duncan, Brown, Weinberg & Palmer, which was designed by Designs for Business Interiors of Washington, DC. We are grateful for the firm's patience and cooperation in allowing their spaces to be photographed on P/A's behalf, and we regret that they were not correctly credited.

## Building materials

**Major materials suppliers for buildings that are featured this month, as they were furnished to P/A by the architects.**

**Los Angeles Bonaventure Hotel, Los Angeles, Ca (p. 52).** Architect: John Portman & Associates, Atlanta, Ga. Caisson foundations: Shoring Engineers. Structural steel frame: Herick Corp. Structural pre-cast concrete frame and floors: Spancrete of California; Rockwin West Corp. (floors only). Paint: Sinclair, Dunn-Edwards. Vinyl/wall covering: Genon by General Tire. Ceramic tile flooring: U.S. Ceramic Co. Vinyl asbestos tile: Armstrong. Quarry tile: American Olean. Carpet: Brinton's, Lees Carpets, Bigelow. Acoustical tile ceiling: U.S. Gypsum. Roof surfacing: URICO. Insulation (batt): Owens-Corning. Sprayed-on insulation: ThermaCoustics. Roof drains: Zurn Industries. Wallboard partitions: Kaiser Cement, Gypsum Corp. Custom curtain wall: Kawneer Co. for Cobbledick-Kibbe. Solar bronze glass: PPG. Wood solid core doors: U.S. Plywood. Rolling doors: Overhead Door, Cookson. Service elevators: Otis Elevator. Aluminum and glass entrance doors: U.S. Aluminum Corp. Locksets: Russwin. Door closers: Russwin, Rixon. Hinges: Henry Soss, Stanley. Panic exit: Von Duprin, Russwin. Paints and stains: Sinclair, Dunn-Edwards. Epoxy: Mitsubishi International Corp. Kitchens (complete): Western Service & Supply Co. Music and sound system: Telerent Corp. [continued on page 114]

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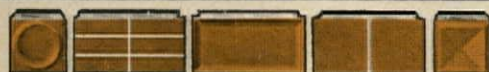
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## News report

### Break in continuity

The new headquarters of General American Life Insurance Co., St. Louis, by Johnson/Burgee of New York is a six-story structure with a three-story floor plan containing one of the city's most impressive interior spaces—a cylindrical rotunda 103 ft in diameter rising 90 ft to a flat ceiling. Located in the Civic Center redevelopment area, the building faced seemingly divergent demands at the outset. General American needed only 150,000 sq ft of space while the Civic Center required a reasonably monumental building. The solution is a square building, sheared on the diagonal, with one triangular three-story section elevated 45 ft and supported on ten 4-ft-thick-aluminum-clad columns.

The building cost \$66 per sq ft and in the St. Louis context of solid, boxlike buildings, it is a gleaming, somewhat jazzy break in predictable continuity. Occupants, who were given their choice in furniture and open plan partition panels, find it congenially workable. Activities include noontime concerts, sheltered by the broad roof of the elevated section.

Air-conditioning equipment occupies 17 ft of the central tower; shafts for three pentagonal, glass-walled elevators are clustered in separate structures at the center. Wall-like service cores in pink brick extend outward from each side of the rotunda like flanges on a key.

The site is near Busch Stadium downtown. Immediately west will be



General American Life, St. Louis, by Johnson/Burgee.



Richard Payne

The historic Old Courthouse is visible beyond windows of a corner office (above); elevator core (below), seen from rotunda floor, links with bridges on each floor.



## News report

an octagonal glass tower office building by 3D/International of Houston scheduled for completion in 1980. The \$48 million tower will be 384 ft high and will contain 876,000 sq ft, making it the largest office building in the state. The owners are First National Bank in St. Louis; International Business Machines Corp.; and the Equitable Life Assurance Society of the United States. [George McCue]

## Catskill resort destroyed by fire

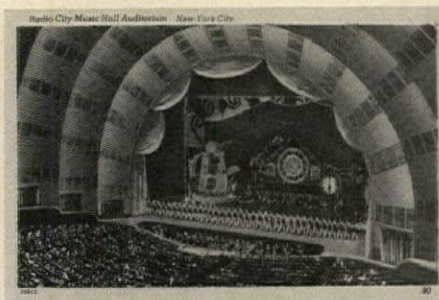
The 99-year-old Cliff House mountain resort in the Catskills burned to the ground on New Year's Day after several years of operating only as a place for special events. The low level of activity meant snow-bound access roads hadn't been plowed, which created difficulties for firefighters. The frame structure was built in 1879 on the bluffs of Lake Minnewaska, NY; across the lake is a companion resort, Wildmere House. In 1954 the hotel was purchased by Kenneth and Lucille Phillips who recently sold 1370 acres—more than half the estate—to the New York State Department of Parks and Recreation to avoid a mortgage foreclosure. The couple had planned to renovate the building into efficiency apartments while keeping the exterior intact. Since 1973 all but the first floor of the four-story resort has been closed to the public.



Cliff House on bluffs of Lake Minnewaska.

## Radio City signals a goodbye

The end of an era will occur in April with the closing of New York's Radio City Music Hall, as announced in January, unless a plan is presented to successfully run the money-losing



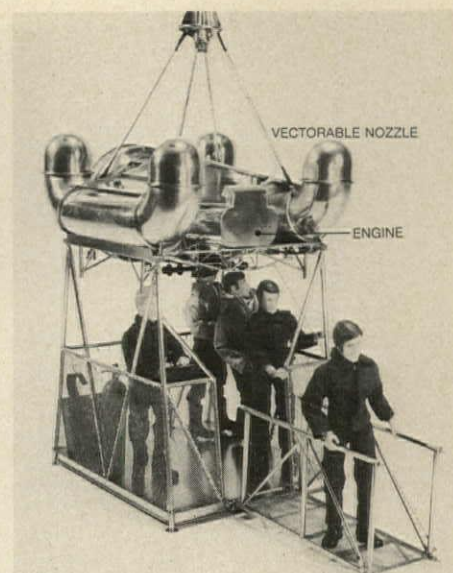
Radio City Music Hall post card.

theater. Losses of \$2.3 million in 1977 were cited as the reason for closing the internationally famous Art Deco hall in Rockefeller Center, home of the Rockettes, which in recent years has tried a number of promotional and entertainment schemes for survival. New York Mayor Koch has appointed his Deputy Mayor for Economic Development to look into the situation, and a state Senate committee on the culture industry also is investigating what can be done.

New York Lt. Gov. Mary Anne Krupsak called an emergency meeting of civic and business leaders pledged to save the hall, and several proposals were forthcoming, one of which Ms. Krupsak said could be "immediate"—to declare the hall a city landmark. Other suggestions included making Radio City presentations available on a season subscription basis, expanding the shows to include theatrical and concert programs, and making the hall a nonprofit organization so it can be eligible for grants.

## Flying unit fights high-rise fires

Aerospace technology has led to the development of a flying unit that can bring firemen and paramedics to fires in high-rise buildings and other inaccessible areas struck by disaster. Called Suspended Maneuvering System, the SMS is being developed by McDonnell Douglas Corporation of St. Louis and will be given test flights this summer. The 2000-lb, self-propelled cab will be suspended by cable beneath a helicopter which can hover at a safe distance from the blaze, smoke, or turbulent air currents while the SMS maneuvers to its destination. The SMS may be guided either manually on board or by remote control. It is powered by a conventional aircraft engine



Model of airborne fire-fighting unit.

that drives a fan delivering air to four controllable nozzles which can change direction and guide the craft. The nozzles operate similarly to those of vertical takeoff and landing aircraft. The 7' x 8' platform will be able to transport up to 16 persons.

## Bauhaus artist creates city park

"Horizons," a group of four porcelain murals designed by Bauhaus-trained artist Herbert Bayer, are the focal point of a pocket park given by the Atlantic Richfield Company of Philadelphia to the Philadelphia College of Art. ARCO Garden helps fulfill a goal of the downtown community-based Broad Street South Association to continually improve the environment through cooperative efforts of corporate and cultural entities. The park includes two fountains and benches; working with Bayer in the park design was the Philadelphia architectural firm Herbert Kramer & Associates. Bayer since



Porcelain murals by Herbert Bayer.

1966 has been art and design consultant for Atlantic Richfield. He studied at the Bauhaus from 1921 to 1923 and subsequently worked for *Vogue* magazine and Dorland Studio, Berlin, and Dorland International. He also is consultant and architect to the Aspen Institute for Humanistic Studies.



Midnight Sun Dinner Theatre by Portman.

## Portman theater's uncertain future

Dinner theaters in Atlanta, including the one by Atlanta architect John Portman, are having difficulty surviving. The Midnight Sun Dinner Theatre, which opened two years ago as part of the famous Peachtree Center complex downtown, soon may close as a theater and be reopened with some other entertainment fare. Portman has blamed theater critics for keeping away public support; he has denied any possibility of bankruptcy and is working on ways to retain the facility for a night spot. Table seating for 455 is on tiers on three sides of a revolving stage. The theater is on the fifth—top—level of the Shopping Gallery of Peachtree Center. Portman, bitter over the negative effect of critical reviews, was quoted in the Atlanta press as saying "Critics seem to think dinner theater should be like Broadway." Another dinner theater in Atlanta has reopened under new management. The one successful dinner theater is in a suburb and features minstrel type shows.

## Cooper-Hewitt at home and away

Two exhibitions of the Cooper-Hewitt Museum, the Smithsonian's design collection in New York, indicate the breadth of its resources and its intentions. "More than Meets the Eye," (through Feb. 28) is the museum's second full-scale show at its permanent home, the renovated Carnegie Mansion, and demonstrates the range and quality of the museum's collection of artifacts. A concurrent design exhibition called "Subways"—part of the "Immovable Objects" series—is installed in the subway station at Sixth Ave. and 42 St., at the commercial heart of the city.

"More than Meets the Eye" contrasts strongly with the museum's big opening show, "Man Transforms," (P/A, Dec. 1976, p. 32) in which only a few items from the Cooper-Hewitt's treasure trove were used in a series of design experiences created especially for the occasion. This time, about 400 choice objects out of the hundreds of thousands on hand, are on display. (Under a new name, "Look Again," and with many supplemental items from the collection, the show will continue through May 15.)

The lessons of the exhibition are contained in three major sections, explaining to the public the resources, processes, and seductive effects of design: construction and techniques (lace, wrought iron, stenciled embellishment, etc.); patrons and clients (church, state, corporations, etc., with appropriate objects); and design sources. In the "sources" section (the largest), objects are organized by motifs, including animals (like the meticulous scarabs encircling a Moderne glass vase), literary themes (Judith and Holophernes in lace, embroidery, and print), and historical events (a textile print based on Lindbergh's flight); a subsection on revival styles includes a mummy mask juxtaposed with 19th-Century evocations of Egypt in engravings and textile. As a dessert, one room is set aside for fun and games—whirling zoetropes, posturing puppets, and a dazzling old *Gioco di Luce*.

To round out the exhibit's thematic sections, some objects appear that would hardly, it seems, be chosen for



Fabric by Lydia Bush-Brown in Cooper-Hewitt.

sheer quality. Yet by pointedly *not* making this a best-of-collection show, the museum has underscored the extraordinary diversity and quality of its holdings and aroused high expectations about future shows.

Meanwhile, brightening the gray expanse of the Sixth Ave. subway mezzanine is an assemblage of photos, maps, posters, and other reproducible objects entitled simply "Subways." The compact display covers such elements as signage and rolling stock, and focuses on 15 systems from Tokyo to Sao Paulo to Munich, Madrid, and Montreal. Subway building is more active than most of us realize: in the past 20 years the number of systems has risen from 24 to 50, and 13 cities have new ones under way.

Among the displayed images, Stockholm's cavelike stations (P/A, April 1977, p. 24) stick in the mind, along with Moscow's chandeliers, Washington's monumental vaulting, and Hamburg's route maps on train ceilings. New York is distinguished for most miles of track, round-the-clock service (barring strikes or black-outs) "express" trains, and little else. A tabloid-style catalog, edited by Peter Blake, is available at the museum and at cooperating book sellers. It allows you to ingest the same information—and more—while seated at home or even while careening along on the "A" train. (JMD)

[News report continued on page 28]



# ALL LIVING THINGS SOMETIMES NEED A BREATH OF FRESH AIR.

## **Kawneer Limit Stop Hardware**

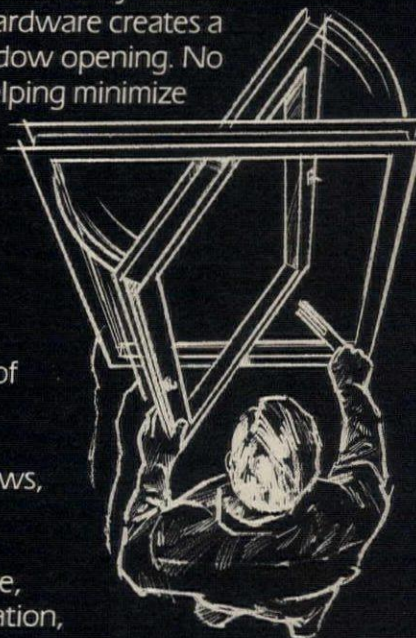
To many administrators of buildings where people work, learn or recuperate it has become apparent that a permanently closed window may not be as safe as once thought. The recent history of power failures and "brownouts" are proof that there are times when fresh air is what is really safe. In fact, many life safety codes now specify a ventilation requirement.

## **Introducing The Prudent Alternative**

Kawneer Limit Stop Hardware for vertically pivoted windows is a sensible compromise between the "ultimate" safety of permanently closed windows and the safety of fresh air. Limit Stop Hardware creates a "ventilation position" of four to six inches of window opening. No further. The limit arm restricts further opening, helping minimize the dangers of a fully open window.

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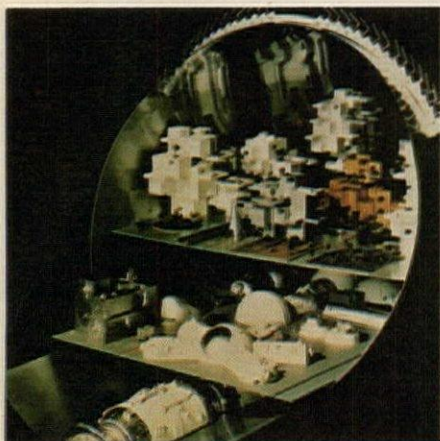
Kawneer Limit Stop Hardware is available exclusively on Kawneer Vertically Pivoted Windows, the same Kawneer windows which offer high performance and ease of operation. For more information, contact your Kawneer representative, or write: Kawneer Architectural Products Information, Dept. C, 1105 N. Front Street, Niles, MI 49120.



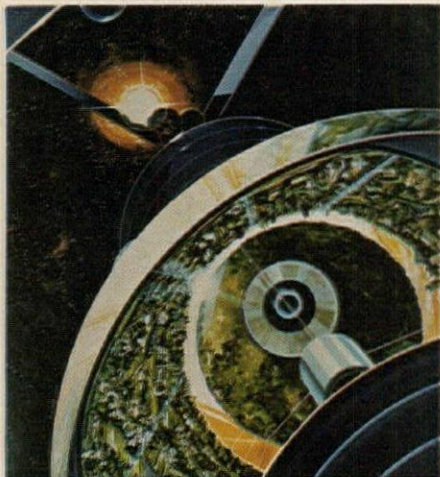
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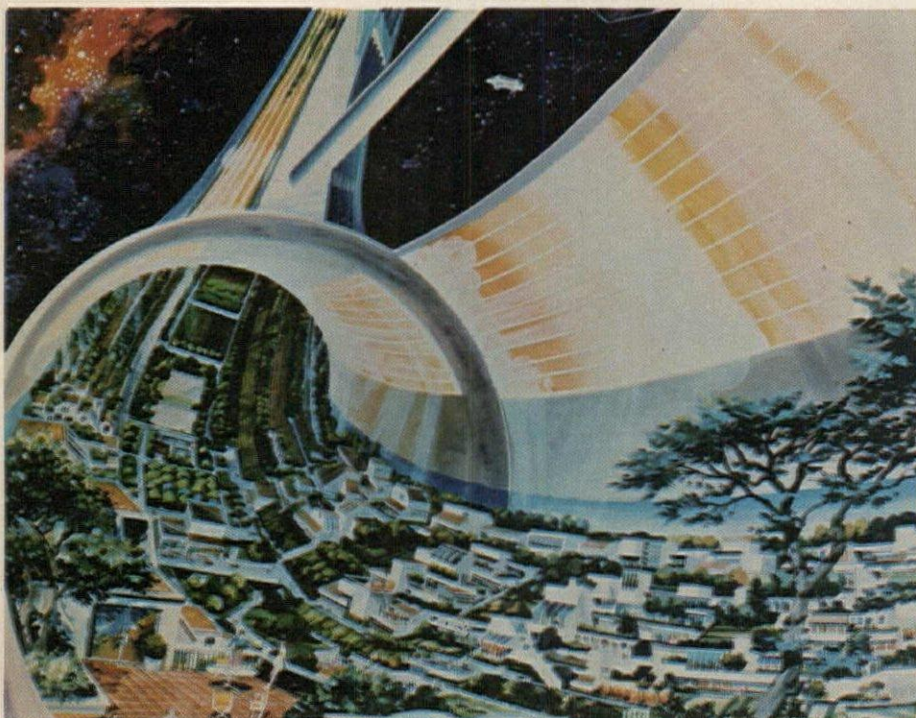
# Report from NASA



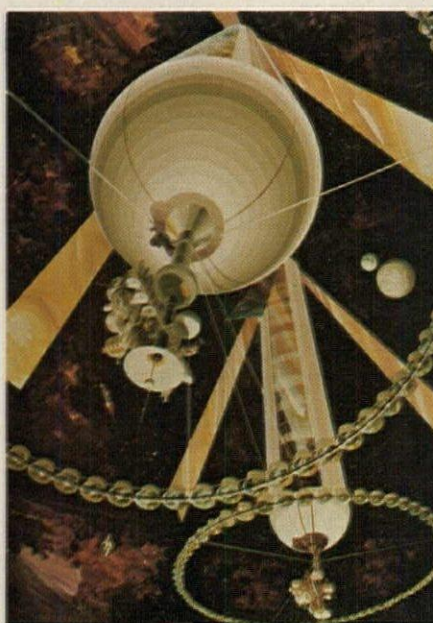
Housing complex in torus colony's outer ring.



Towns and farms (above left and below) in the outer torus ring, which rotates to simulate gravity.



Two space colonies: the wheel-like torus (above) and 19-mile-long twin cylinders (below), largest of four basic types proposed.



Photos: courtesy of NASA

## Design for outer space

Space colonization described by the recent NASA publication, *Space Settlements, A Design Study*, certainly will lead to radical changes in human life and the man-made environment, on Earth as well as the satellite communities. The National Aeronautics and Space Administration report equates the potential for change with that which took place when animal life left water for dry land. Limitations which will determine design of the first colonies—gravity, temperature, length of day—eventually will give way as man adapts to his manufactured settlement; accustomed to a totally controlled environment, man someday may view Earth as "harsh" and a primitive place to visit as a tourist.

NASA's report estimates that the new colony housing 10,000 people will cost \$190.8 billion (1975 dollars) but that within 45 years its productivity in furnishing solar power and mining raw materials from the Moon and asteroids will yield annual benefits of \$304.8 billion. Growth projections for such colonies show that within 56 years enough space communities could be built to house the equivalent of today's Earth population.

The team which produced the report met for ten weeks in 1975 at Stanford University and NASA's Ames Research Center under the technical direction of Gerard O'Neill, physicist at Princeton University, who had previously studied space colonization for six years. Of the types of satellites investigated, the team decided a torus (doughnut shape) form was best since it afforded the most economy of structural mass. The outer ring would be a mile in diameter; the cross section of the ring would be 427 ft. In the ring, housing and agriculture would take place. The colonists would grow enough food on 156 acres, using intensive photosynthetic production, to feed the entire population of 10,000. The design team foresees satellites that could be more than 12 miles in width.

Benefits of such colonies include opportunities for deep space exploration; advancement of technology in communication, travel, construction, and automation; more flexibility of architectural design as, for example, man adapts to zero gravity; a higher [News report continued on page 32]



## Red Cedar: The natural choice for a natural setting.



Lake residence, Arkansas. Architect: E. Fay Jones

Rectangular towers, sweeping glass walls and plunging roof lines all add to the dramatic impact of this Arkansas home, which nestles into a wooded hillside and projects over a lake.

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Insulative ("R") values of roofing products shown below. Source: ASHRAE Handbook, and California Energy Design Manual.

Cedar Shakes (Heavy)	1.69
Cedar Shakes (Medium)	1.15
Cedar Shingles	.87
Built-Up Roofing, Slag	.78
Asphalt Shingles	.44
Built-Up Roofing, Smooth	.33
Asbestos Cement Shingles	.21
Slate	.05

**Red Cedar Shingle & Handsplit Shake Bureau**

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**For sealing problems.** In both old and new buildings. MONO® Tremco's superb all-around sealant, is ideal—even when sealing conditions are not. Other systems seal fire-rated ventilating systems and metal-to-metal joints under tension.

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life style; a more egalitarian approach to property rights in the "man-made" environment; a pioneer spirit of optimism and enthusiasm.

Establishing the colonies would provide both a challenge and opportunity for developing new construction technology. The likely method presented by the report is "space tunneling," assembling prefabricated pieces (made in space) along a tube which has movable end caps. Also discussed is a method of converting raw

materials directly into seamless, stressed-skin, hull-like structures by using a vacuum and solar heat.

## Institute honors outstanding work

The American Institute of Architects has announced a partial list of awards recipients for the year 1978. The Kemper Award, given for outstanding contribution to the profession, will be presented to Carl Bradley of Fort Wayne, In, a Fellow in the Institute who has served in elected positions. Harry

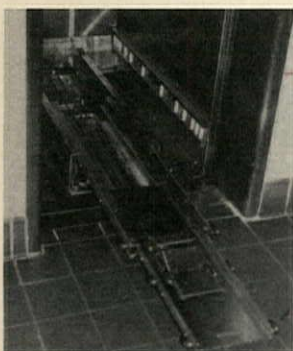
Weese & Associates of Chicago was named for the architectural firm award.

AIA medals will be presented to architect John Portman of Atlanta, author Frederick Gutheim, and the National Trust for Historic Preservation for accomplishments demonstrating integration of disciplines; to Robert Venturi of Philadelphia for his book, *Complexity and Contradiction in Architecture*; to artist Richard Haas in the artist and craftsman category; to author David Macaulay and artist Nicholas Solovioff, in the category of illustration and recording of architectural accomplishments; and to structural engineer August Komendant, landscape architect Robert Royston, and educator Stanislaw Nowicki, for an inspiring influence on the profession.

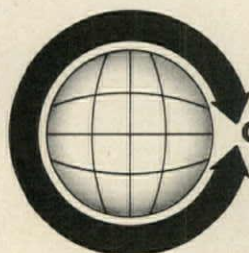
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## Personalities

**William Slayton**, outgoing executive vice president of the American Institute of Architects, has taken the position of Deputy Assistant Secretary for Foreign Buildings Operations with the Department of State. His responsibilities include overseeing the construction of US embassies abroad.

**David R. Dibner** has been named assistant commissioner for construction management of the U.S. General Services Administration's Public Buildings Service, Washington, DC.

**Richard L. Anderson**, vice president of Wilde Anderson DeBartolo Pan Architects, Inc., Tucson, has been elected president-elect of the Arizona Society of Architects.

**W. Lawrence Garvin** has been appointed associate dean of architecture in the Texas Tech University College of Engineering, Lubbock. Garvin was also named chairperson of the Division of Architecture.

**George J. Hasslein** has received the award for excellence in education from the California Council of the AIA. Hasslein is dean of the School of Architecture and Environmental Design, California Polytechnic State University, San Luis Obispo.

**A. Quincy Jones**, dean of the University of Southern California School of Architecture and Fine Arts, was awarded the distinguished service citation by the California Council of the AIA.

[News report continued on page 35]

# How to create your own modular brick wall systems.

First, take a  $\frac{7}{16}$ " brick.



The 4' x 8' module you're

looking at is faced with 92 Mini-Bricks that weigh just 127 lbs. They're genuine kiln-fired architectural bricks made of high-specification Alberhill clays.

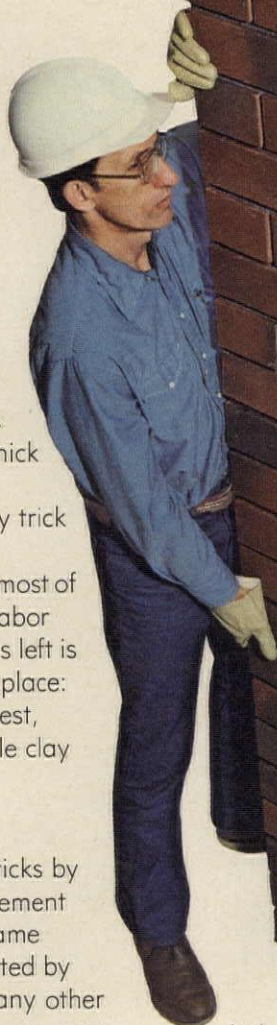
We've developed a process to wire cut and fire the  $\frac{7}{16}$ "-thick bricks that preserves their dimensional integrity. No easy trick with clay. But it's done.

So — what we've cut out is most of the weight and much of the labor needed for installation. What's left is what you wanted in the first place: the look and feel of real, honest, uncompromised, incomparable clay brick.

## They go up in a hurry.

Make modules out of Mini-Bricks by adhering them to asbestos/cement board mounted on a steel frame (shown here as plant-fabricated by one manufacturer) — or use any other rigid system that gives you near-zero deflection.

Or lay Mini-Bricks up directly to virtually



Brick weight on this 4' x 8' module is just 127 lbs. Face brick size #312 Mini-Bricks used ( $3\frac{1}{2}$ " x  $11\frac{1}{2}$ "")

any properly prepared substrate.

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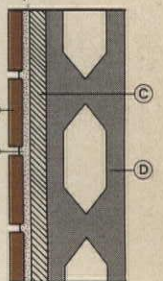
## 4 sizes — over 30 finishes.

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All the details are summed up in several brochures: a full-color piece showing a variety of applications; technical literature showing application over a variety of substrates, plus all specifications. They're what you need to start thinking Mini-Brick.

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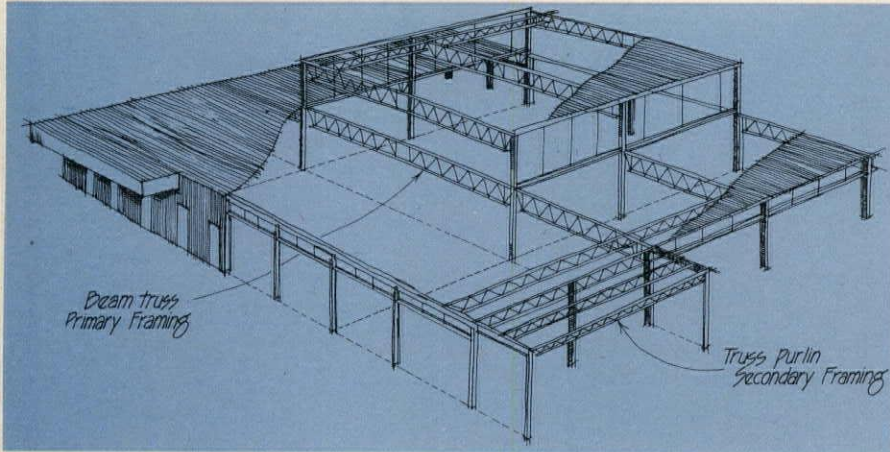


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Versatility and economy of Mini-Brick means you can use more masonry—glazed and unglazed, facings and pavers, inside and out. (left) Glazed Mini-Brick used as pavers and in raised planters lead to and define client seating area in office interior. (right) Riverside, California City Hall — Mini-Brick used to face seven-story structure, yet no costly, heavy back-up framing or typical reinforcing steel needed.

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Architect: Odell Associates, Charlotte, North Carolina

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McGraw Edison, Columbia, Missouri  
Architect: Ralph Broughton, St. Louis, Missouri



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Send for our free book.



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## Calendar

**Through Feb. 16.** "Architectural Views, Physical Facts, Psychic Effect," exhibit, Los Angeles Institute of Contemporary Art.

**Through Mar. 19.** "Drawings by LeCorbusier" exhibit, Museum of Modern Art, New York.

**Through July 30.** "The Decorative Designs of Frank Lloyd Wright" exhibit, The National Collection of Fine Arts, Washington, DC.

**Feb. 24.** Deadline for entry materials and panels in the American Consulting Engineers Council engineering excellence awards program, Washington, DC.

**Mar. 1.** Deadline for submissions to the Lumen Awards Program, sponsored by the New York Section, Illuminating Engineering Society of North America.

**Mar. 5-Apr. 1.** "The Architecture of James Stirling: Four Works" exhibit,

Graham Foundation, Chicago; Subsequent exhibits: **June 25-July 22.** University of Washington, Seattle; **Aug. 13-Sept. 9.** Baltimore Museum of Art; **Oct. 8-Nov. 4.** Moore College, Philadelphia.

**Mar. 6.** Conference on architectural preservation and its impact on the design community, The Graham Foundation, Chicago.

**Mar. 9-11.** National Home Improvement Council convention, Atlanta.

**Mar. 16-17.** Barrier-Free Buildings Workshop '78, *Progressive Architecture*, San Francisco. Subsequent workshops: **Apr. 3-4,** Houston; **Apr. 10-11,** New York; **Apr. 17-18,** Chicago; **May 1-2,** Atlanta. Details, p. 112.

**Mar. 16-18.** Second National Passive Solar Heating and Cooling Conference and Workshop, coordinated by the Mid-Atlantic Solar Energy Association, Philadelphia.

**Mar. 16-31.** Exhibit of Charles Pollock sculptures and drawings, sponsored by Thonet Industries, at their showroom, Merchandise Mart, Chicago.

**Mar. 24.** Deadline for entries in the U.S. General Services Administration De-

sign Awards Program, Washington.

**Mar. 26-30.** First world congress on resource depletions, energy alternatives, and the quality of life in the year 2000, sponsored by the University of Riyadh, Saudi Arabia.

**Apr. 5-10.** Society of Architectural Historians annual meeting, San Antonio.

**Apr. 8-11.** Environmental Design Research Association annual conference, University of Arizona, Tucson.

**Apr. 9-13.** Design Atlanta contract residential market, Atlanta.

**Apr. 17-19.** Annual apartment builder/developer conference and exposition, Georgia World Congress Center, Atlanta.

**May 15-20.** International Federation of Interior Designers world congress, Washington, DC.

**May 21-24.** American Institute of Architects annual convention, Dallas.

**May 26-28.** Aspen Energy Forum, Roaring Fork Resource Center.

**June 11-16.** International Design Conference in Aspen.

**June 18-21.** Construction Specifications Institute annual convention, San Antonio.

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## Carter reviews major preservation change

The most far-reaching changes to the nation's historic preservation program since its inception in 1966 are about to be made. P/A has learned that Secretary of the Interior Cecil D. Andrus has recommended to President Carter that the historic preservation program now in the National Park Service be com-

bined with the Bureau of Outdoor Recreation. The new agency would be called Heritage Conservation and Recreation Service, in the Interior Department.

Reaction is guardedly optimistic. Many preservationists are pleased that historic preservation is to be taken from the National Park Service, but some fear it could wind up in a similar situation, playing second to a program involving the natural environment. The President has approved the plan and included it in his budget submitted to Congress. [Carleton Knight]

# Granite.

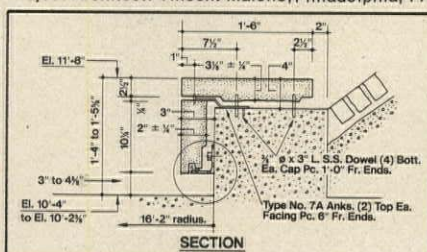
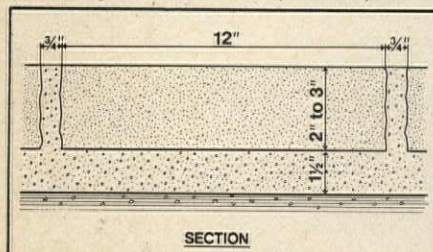
## Not-so-pedestrian plazas for pedestrians.



Architect: Joe Karr & Associates, Chicago, IL  
Sturr Young, Associate Architect, Oak Park, IL



Architect: Murphy Levy Wurman, Philadelphia, PA  
Project Architect: Vincent Maiello, Philadelphia, PA



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## Design in Michigan traveling exhibit

An exhibition documenting past design achievements in Michigan and showing more than 150 contemporary design projects will travel to six cities in the state this year as part of a program to make people more aware of the efficiency and effectiveness of good design. "Design in Michigan" opened last year at Cranbrook Academy of Art which, together with the Michigan Council for the Arts, sponsor the show. Robert Blaich, vice president for design at Herman Miller, Inc., was chairman; James Crawford was coordinator; and designers were Katherine McCoy and Michael McCoy of Cranbrook's design department. The exhibit includes vehicles for BART in San Francisco, designed by Sundberg-Ferar of Southfield; office plans; furniture; signs; and a motor home. Jurors were Robert Gersin, visually communications; Niels Diffrient, industrial design; Sharon Lee Ryder, interior design; William Caudill, architecture; and Steven Moorehead, landscape architecture and planning. The 1978 schedule is Jan. 22-Feb. 26, Grand Rapids Art Museum; Mar. 12-Apr. 16, Hackley Art Museum, Muskegon; Apr. 30-June 4, Saginaw Art Museum; June 18-July 23, Midland Center for the Arts; Aug. 6-Sept. 10, Flint Institute of Arts; Sept. 24-Oct. 29, Ferris College, Big Rapids.

## ARA approves advertising

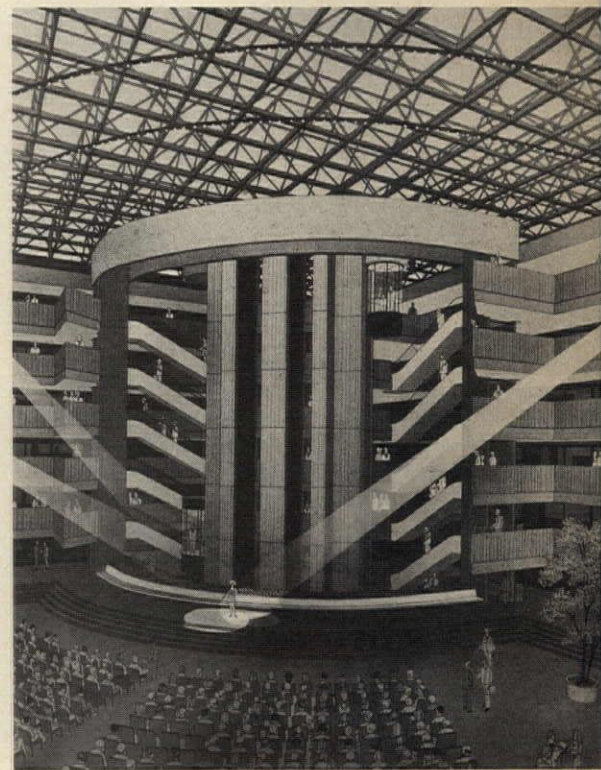
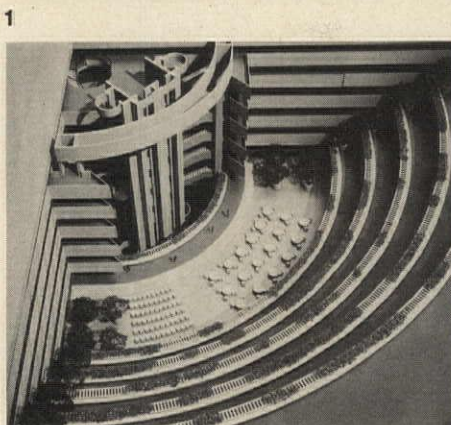
The 21-year-old Society of American Registered Architects voted unanimously at its annual convention to allow its members to advertise; as such the ARA becomes the first architectural organization to take this controversial step. ARA president Jerome Salzman of Chicago cited recent court decisions requiring attorneys to advertise, in the interest of consumer information, as a deciding factor in the ARA's action. At the same meeting the ARA also voted to recognize architects as "master builders" and to encourage their involvement in construction management, joint ventures, and design-build teams.

[News report continued on page 41]

## In progress

**1 Portman projects**—John Portman & Associates of Atlanta is the architect for the \$40 million Atlanta Apparel Mart destined for the site just west of Portman's Peachtree Center in Atlanta. The first phase will be seven stories and 1.2 million sq ft; phase two will be another seven floors and 1 million sq ft. The National Press Club and two Portman entities—the architectural firm and the development firm, Portman Properties—are involved in the recently announced proposal to build a \$100 million hotel, office, and shopping complex next to the historic Willard Hotel in Washington, DC (illustrations not available). The city's height limitation of 160 ft would be in effect; go-ahead reportedly is contingent on approval of a city convention center, a proposal deadlocked in Congress. Portman, however, expects the complex to be open for the next Presidential Inauguration.

**2 Jerusalem complex**—Israeli architect Moshe Safdie and French planner Gilbert Weil are associated designers for a \$150 million mixed-use complex to be built on 30 acres of a Jerusalem strip undeveloped for years and known as "no man's land" after the 1948 partition of the ancient city. The developer will be Karta, Central Jerusalem Development Company, a government-owned corporation. Private investors will develop commercial phases according to the master plan, approved by the Jerusalem Committee, an international group of professionals and cultural leaders. Already \$20 million in government loans have been invested in the project, six years in the planning, including compensation to 600 families. Known as Mamilla, the complex will include a retail mall, office space, hotels, terraced apartments, gardens, and parking for 2400 cars.



# P/A Awards



Photos: D'Arlene Studio

P/A AdAwards seminar in progress at the Plaza Hotel.



Despite near-blizzard outside, 180 guests attend P/A Awards lunch in the Terrace Room.



George Nelson (above). Laurinda Spear (below) and Bernardo Fort-Brescia with John Dixon.

## Blizzard doesn't blanket awards

Snowfall and high winds that almost qualified as an official blizzard didn't prevent the 25th annual P/A Awards and its companion AdAwards program from going forward as scheduled last month in New York. The anticipated number of guests—a record exceeding 300—hastily was revised to half when it was apparent that a 14-inch snowfall—worst in eight years—had closed airports, clogged major roads, and forced rail lines to run on an irregular schedule involving hours of delay. Even still, 180 guests arrived to lunch at the Plaza Hotel, watch 34 winners receive awards and citations, and hear guest speaker George Nelson, who said architecture is a reflection of changing social values—a case being the appearance of the “topless” (hence uniform and symbolically expandable) office tower in the 1950s and the current reappearance of “tops.”

Those who attended either were from Manhattan or else from the farthest distances, such as the Llewelyn-Davies International group that spent 24 hours on board an airplane enroute from Tehran. Richard Meier, one of the jurors, remained in New York to attend even though the next day he was to be married in Plymouth, Ma, and it was debatable whether he could arrive in time for the ceremony.

Interviewed for local television, Plaza management proudly told of proceeding with the P/A event despite a shortage of waiters and cooks. A P/A senior editor was filmed for TV news being dragged across Fifth Avenue on a human “chain” in high winds.



Ad winner Paul Gloe (left) and publisher Philip Hubbard Jr. Senior editor Suzanne Stephens (below) with Ted Liebman, Peter Wendt, Frank Williams, Peter Samton, and John Ellis.



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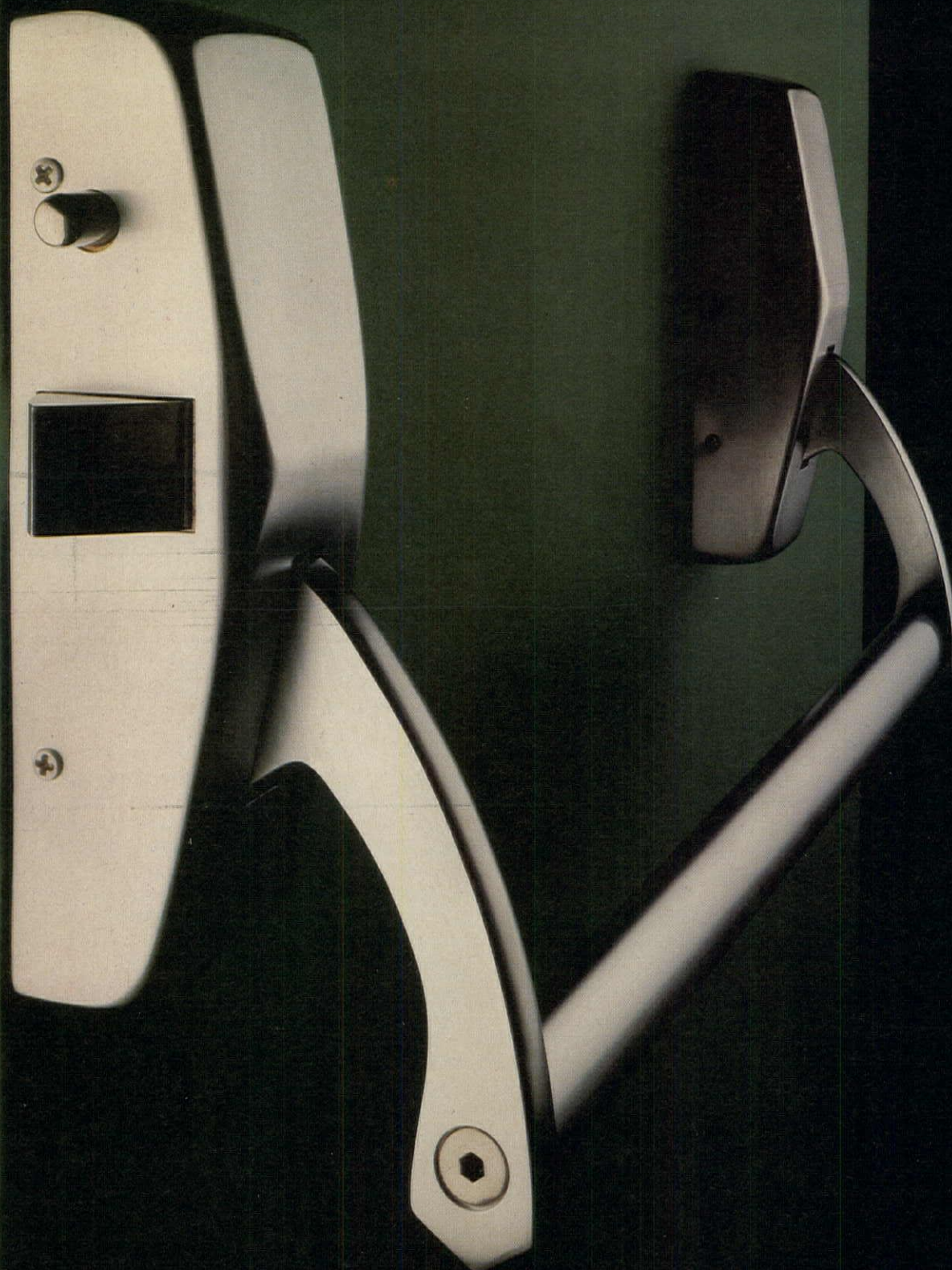
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## Introduction

# Leaving the natural behind

**From mom-and-pop-owned country guesthouses to leisure villages, from the hushed dark elegant lobbies of city lodgings to dizzying extravaganzas, hotels have changed. So, evidently, have guests.**

On the following pages, P/A presents different manifestations of American hotel architecture. One, in a resort area of New York State (p. 46) evolved as a mountain retreat for vacationers; another, the John Portman hotels in Los Angeles (p. 52) and Detroit (p. 57) were designed as urban attractions for conventioners and other travelers.

Yet a pervasive trend typified by some recent Catskill resorts ties them to the "new" urban hotels—that of introversion. Growing out of the 19th-Century tradition that stressed interaction with nature, recent Catskill resorts have developed into "leisure villages" where interaction focuses on people, with nature providing the backdrop. Beginning with the gazebo, the outpost from which one could contemplate the landscape, and then the veranda, the enclosed porch-promenade, and finally "winterized" recreational facilities, architectural expression in the Catskills has increasingly reflected this withdrawal from the natural world into the social milieu.

With the Portman paradigm, the natural landscape of the resort hotel has been replaced by an artificially created one at the core of a spacious lobby. The typical elements of the resort hotel appear in the Portman versions, although transmogrified: gazebos, verandas, dining halls, outdoor platforms floating on a lake are all deployed in and around skylit interior landscapes of vines, water, and rocks (exposed concrete). The linear circulation of a laterally spread Catskill resort has been replaced by an enclosed volumetric space through which inhabitants move on cantilevered stairs, escalators, and glass-enclosed elevator cabs that cross in a vision evocative of Piranesi.

But Portman has made this staging more appealing to today's audience by exploiting a lesson demonstrated by amusement parks: that the *thrill* of vertical space is more readily felt with the mechanized kinesthetic experience of roller-coasters and ferris wheels than with a purely peripatetic one. He has made the general public ap-



Photo: John Margulies

From the veranda of the Cliff House, recently razed by fire.

preciate architectural space—especially at a gut level.

If the Portman hotel also reinstates the importance of the grand lobby of the 19th-Century urban hotel, the hushed aura has been traded for the organized entertainment of a Grossinger's resort combined with the commercially based diversions of the suburban shopping mall. Architecturally the "new" hotel has to appeal to broad numbers of people. Portman hotels do vary, but typologically and stylistically they adhere to a calculated formula grounded in today's marketing values. And, strangely, the architectural variations within a strictly prescribed code don't guarantee the same standard of performance with each new debut.

If standardization and its (somewhat paradoxical) handmaiden, uneven quality, were characteristic of Portman's work alone, discussion would border on the picayune. But "knockoffs" proliferate that omit ingredients, ignore rules of Portman's combinations, or just make spaces smaller, with cheaper materials and cruder detailing. The imitations rob the authentic version of its impact and uniqueness; they consume the original. Part of the reason is endemic to the nature of the knockoff; another part reflects on the original model: while Portman makes so much of internal architectural space, he has never done much with external architectural *mass*. His containers are scaleless, overly simplified geometric forms that do little to relate in any way to the scale of the pedestrian/user. Nor do they or their blank-walled podiums relate to the urban streetscape. The "new" hotel may remain an enclosed "cocktail island" floating in a stagnant pond of the urban landscape.

The 19th-Century desire to escape from urban reality into nature was an extroverted, even transcendent act, and, one that allowed for solitude and contemplation. Portman's emphasis on *people* ("We're trying to create a lifestyle . . .") carries with it an exploitative edge. A strong strain of narcissism underlies this manifestation, a narcissism at the heart of the desire to escape and the need for fun, fantasy, and entertainment to which the glittering chimera of the "new" hotels cater. When Portman says he is not "anti-Disneyland" because "We're all children," one is uncomfortably reassured just how childlike this appeal can be. [Suzanne Stephens]

# Upward and inward with time

Photographs by John Margolies  
Text by Elizabeth Cromley

**The following material, a basis for a future exhibition, analyzes social and architectural aspects of one unique but typically American phenomenon in hostelry: the Catskills resort area.**

The Catskill Mountains resort region is a small area, but one in which an amazing diversity of architectural expression for vacation experiences exists. Located in southern New York state, a short trip from Albany, Philadelphia, or New York City, this 3000-sq-mi, four-county region has been attracting urban vacationers since the early 1800s. Hudson River sail and steam afforded access when the first major hotel, the Mountain House (demolished in 1962) opened in 1823 in Haines Falls, NY. After the Civil War, railroad lines penetrated the mountains and new hotels proliferated "like mushrooms in the night" in the words of an 1890s observer. The automobile's introduction in the early 1900s offered a third mode of access to the Catskills and another impetus for hotel construction. A century and a half of building has now produced, in a multiplicity of styles, a very responsive architecture that constantly changes with the pressure of its varied clientele's needs and tastes.

One of the interesting features offered by Catskill resorts is the opportunity of staying with one's own ethnic group on vacation. Numerous resorts are known as Irish, Jewish, Italian, Greek, or German, to

**Author:** Elizabeth Cromley, who teaches art history and architectural history at the City College of New York, is currently doing research on 19th-Century attitudes towards the design and use of multiple dwellings.

**Photographer:** John Margolies' work on Catskills architecture continues documentation of vernacular architecture, particularly hotel and motel design. See "Morris Lapidus—Architecture of Joy" P/A, Sept. 1970, pp. 118–123; "Roadside Mecca in California—The Madonna Inn," P/A, Nov. 1973, pp. 124–129.

name a few. Hotels with a marked ethnic flavor, however, rely on music and food, and organized behavior patterns, such as religious services within the hotel proper, to identify the affiliation. The ethnic type will be subtly imparted by the name of the hotel and a logo on its signboard, rather than any more extensive architectural symbols—with rare exceptions such as the "chalet" at Bavarian Manor.

## Typology and theme

There are definite stylistic quirks but little consistent style in Catskill resorts. The reasons probably are that the major period of development (1870–1930) was an eclectic one, and many hotels were built in fragments, with rooms added when demand required and financing allowed. Local styles include the "fat roof" of Jeffersonville, Grossinger's half-timbered surfaces, and the "fireproof" stucco of the Polonia so common in Sullivan county in the 1920s. One also finds Greek Revival, French, and Italianate styles. But since the majority of the hotels were not architect-designed, they do not submit easily to the usual canons of architectural history.

Given this diversity, six general categories of building types represent a better ordering device. From the earliest beginnings of the family-run hotels comes the *farmhouse/boarding house*: This sort obviously began as a farmhouse where the owners started taking in boarders in summer, as at Osborne House. Another early type is the *inn/tavern*: located along a turnpike or main road through town, this type had its origins as a stopping place for commercial travelers and often served as social center for early towns. A resort manifestation of the late 19th-Century economic growth was the *palace*: set in a landscaped park, grand and impressive, this type has mostly disappeared; Mohonk is a classic example. As the resort business expanded there appeared the *moderate-sized hotel block*: simple, designed to hold 100 to 300 guests, this type is the core of many expansions such as Grossinger's. In the 20th Century came the *bungalow colony*: offspring of the tent, this

type provides a tiny house for each guest family to pursue its usual private-life patterns in a rural setting. Finally there appeared the most common latter-day answer, the *motel*: units grouped into a low block with separate entrances to each room from the outside.

Most hotels in the area are a combination of these building types; few are pure after years of renovation and expansion. But all show a persistent use of functional themes that posit indoor/outdoor and public/private relationships. An examination of these themes has provided us with a way to compare the diverse examples of style and building types in the Catskills.

The indoor/outdoor theme leads to questions of siting the hotel in the landscape as something to *be seen* and something to *see from*. Because the Catskill area is so varied, there are any number of natural features that could provide a hotel with an appealing setting and satisfy a great range of tastes in the tourist's appetite for nature. As the early 19th-Century's attraction to wilderness diversified into an appreciation of a broader range of scenery, hotels could succeed among ragged cliffs or rolling hills. Tourists wanted clean air, fresh food and water, and didn't require sublimity so much as hospitality. In a very general way the emphasis has now tipped from hotels being situated in relation to nature's spectacle, to hotels creating their own spectacle with a rather incidental relation to site as nature created it. Nevertheless, being in the country is still crucial for the hotel's functioning. Even in the grandest of the large-scale Sullivan County resorts like Grossinger's, where much of the environment is air-conditioned and weather-proofed, guests still prefer the outdoor pool and the genuine suntan, and no one has yet roofed the golf course. The trees and bushes outside the plate glass are still critical for a sense of place. Nature has not at all been abandoned—only reframed.

The veranda, balcony, and other transitional spaces are constants in all styles and periods. Since the 1920s, however, such spaces tend to be glass-enclosed rather than open to the air (as Grossinger's



Enjoying nature from a gazebo at Mohonk Mountain House.

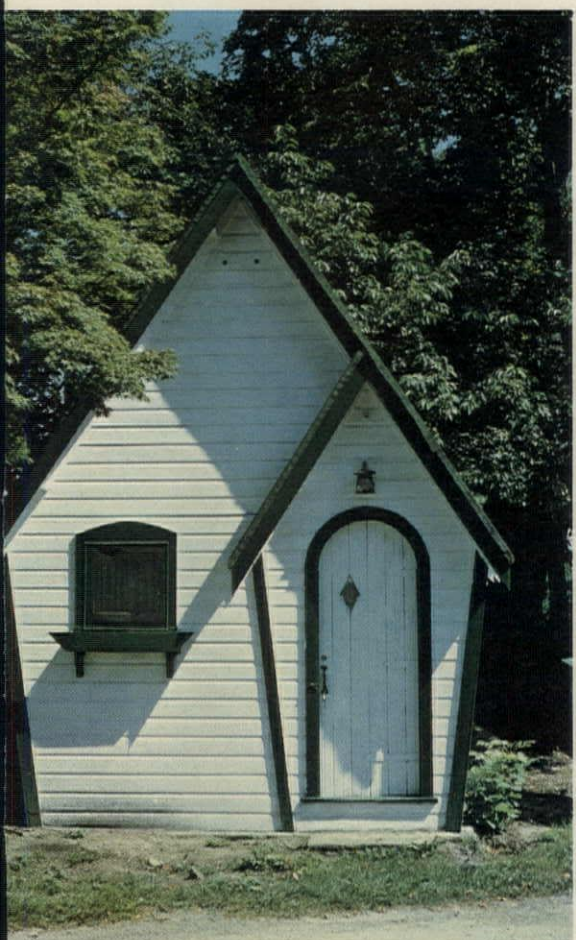
Photo: Courtesy Mohonk Mountain House



Barn into boardinghouse, The Hestoria, near Durham, NY.



Bungalows, a 1930s entry, at Mountain Lake Manor (above) in the more typical vernacular style, and in the less typical version, at Marteen's Cabins (below) from the 1920s, Marlboro, NY.



The wicker room (above) and lakefront platform (below) at Hanson's Hotel c. 1863, Deposit, NY.



The Bavarian Manor, built in the 1860s in Purling, NY, has "chalet" style motel attached.





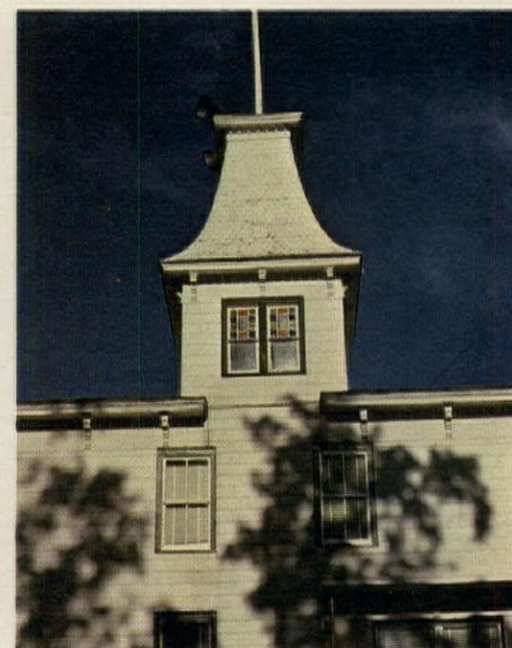
Scott's Oquaga Lake House began as a bowling alley, 1903 (above); main lobby (below).



Sugar Maples resort (below) 1910, took over older houses along main street in Maplecrest, NY.



Scott's boathouse, now gift shop (above). Architectural styles shown in Saulina's Hotel Jefferson, Jeffersonville, NY. (below) from the 1920s; Polonia House from the 1930s in Fallsburg (middle), closed in 1976; and Osborn House (bottom) in Hensonville, a house that opened in 1878 as a hotel.

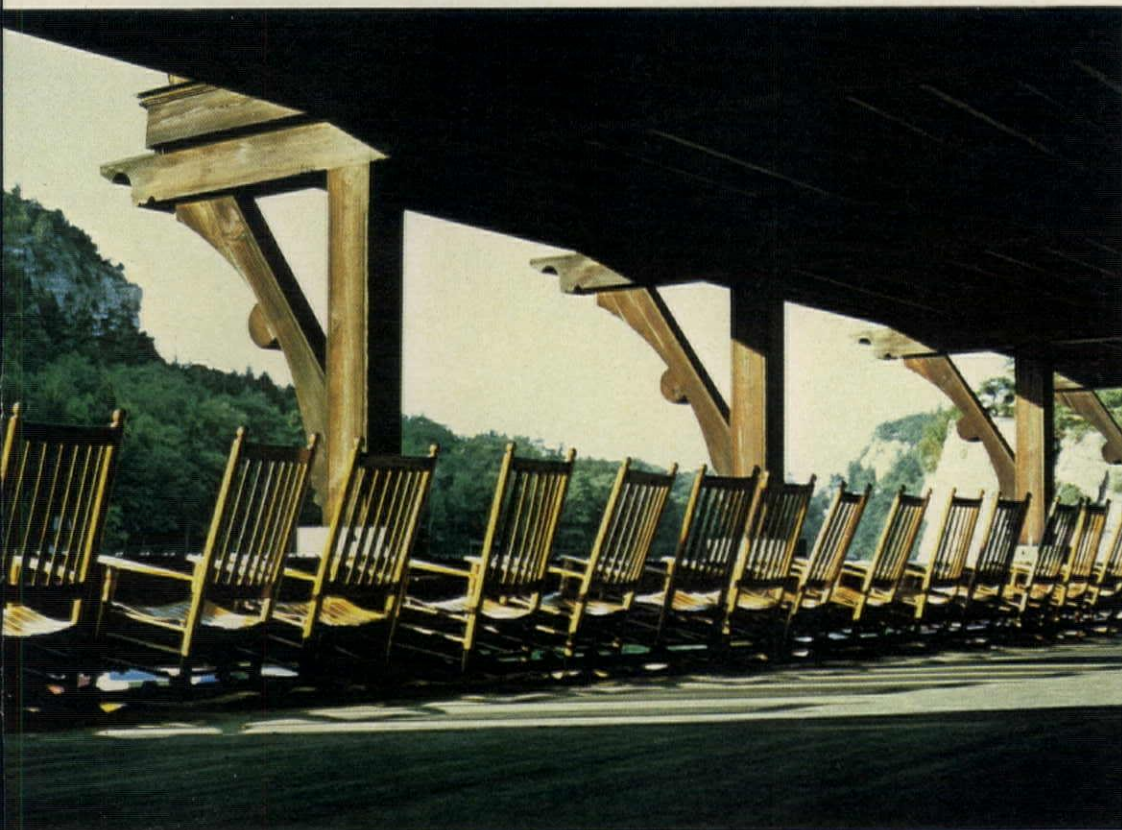




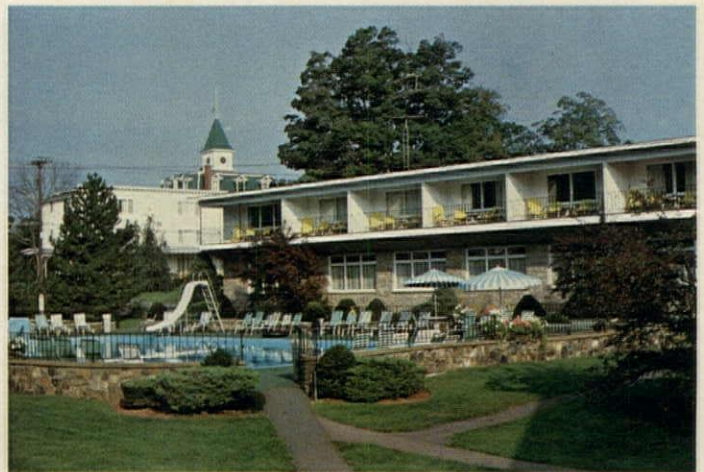
The Mohonk Mountain House, New Paltz, NY: part built in 1879, architect unknown. James Ware designed central parlor (1900) and stone wings, 1898 and 1902.



The central building seen from gardens (above) designed in 1888 by Napoleon Lebrun as was dining room (right) wing 1892.



## Catskills resort architecture



Thompson House, Hansonville, NY, opened 1880 (left) and added onto over years (right) shows transition from house to 1950s motel.



Grossinger's Hotel, Grossinger, NY expanding at this location from 1919 is seen from the road (above); enclosed lobby-corridor (left). Tudor-style additions dating from 1930s (below) swallowed original hotel, which began with a farmhouse.



veranda-corridor shows). The gazebo or summer house such as those found at Mohonk, is a 19th-Century offspring of the veranda—a little segment of the porch free-standing in nature. It offered an outpost of civilization from which to watch the natural wonders and is replicated in part by the modern beach umbrella.

The theme of public/private relationships leads to an examination of internal planning, the nature of public spaces like the lobby (such as Scott's Casino), the parlor (Hanson Hotel's wicker room), or the dining room. Especially interesting is the evolving attitude toward bedroom and bathroom that resulted in quite varied architectural treatment.

Of course, one sleeps while on vacation. The one piece of privacy within the rather public world of the resort is one's own room where one looks forward to rest, quiet, renewal for the social contacts and entertainment that fill most of resort time. It was not always so, however. Our notions of sufficient privacy seem to be rather new. In the earlier years of vacationing in the Catskills, rooms were typically shared, because there were not enough to go around. Where we might retire to our rooms for a refreshing pause, our predecessors in the resorts would retire to nature. One's room might be shared with strangers, but the outdoors provided the refreshment to the spirit, the relaxation that was one's reason for going on vacation. One could sit alone in contemplation of nature and indulge in solitary pleasures such as sketching or writing. Gazebos only seated two comfortably, no more.

The bedroom of a century ago was likely to be small and simple. It would have had a pitcher of water and a basin for washing—no sink, toilet, or bathtub. These were down the hall to be shared by the whole floor. The resort bedroom today is somewhat more lavish than one would expect in an apartment building. Walls are better soundproofed, ceilings higher, dimensions a bit more generous than even average modern houses provide. Today no one would build a new resort bedroom without private bathrooms, and wall-to-wall carpeting is as essential as color television and air conditioning. Queen-size beds and giant closets are standard. The scale of comforts has increased handsomely since the 1940s; facilities that would have been considered generous for six are now normal for two—imparting a sense of the sybaritic to the ordinary private functions of the vacationer.

The dining room and its offerings have always been a special attraction of Catskill resorts. In the days before refrigeration and FDA regulations, being near the source of food supply meant that Catskills food would be more nutritious and better tasting. Milk straight from the cow and carrots from the garden were big selling points of the farmhouse-resort, and the origin of the area's reputation as a place to eat well. The hotels produced and prepared food for many decades.

The early 19th-Century hotels served the

same meal to everyone. There were no menus. Served on big platters, the meal was passed around the table and you hoped that by the time the platter came to you there was still food on it. This family style service was gradually supplanted after 1872 by separate small tables and menus offering choices of meals. The 20th-Century Catskill kitchen made its reputation not only for freshness but for quantity.

Immigrants who perhaps had first-hand knowledge of starvation felt the plenty of the countryside served up from resort kitchens was good enough reason for returning again and again to the Catskills. That tradition of bounty still exists.

Since the first big hotels, one of the standard—if unmentionable—features of their architecture has been the endless corridor. Plans of 19th-Century hotels show that endlessness is not a modern invention, although some of the large Sullivan County hotels have developed the theme to even greater lengths. With the recent trend towards connecting the various separate buildings of a resort with enclosed walkways for weather protection, the number of corridors has increased tremendously. Here we see one of the eternal conflicts of resort design: the buildings should keep a low profile so they don't disrupt the scenery, but the resultant spread increases travel time between different functional areas. One can cut down on travel time by taking a "short cut," which invariably means going outdoors. But if you value the buffer between you and nature which the hotel provides, you might just choose to stay in and opt for the longer route. Recent vertical development for new guest wings (see Grossinger's) is the large hotel's partial remedy for boundless horizontal spread.

### Trends over time

The future of the Catskills as a resort area may be predicted only tentatively on the basis of its historic development. One general trend has been the growth of a few large resorts that have absorbed the tourist trade once enjoyed by dozens of smaller places. Currently successful hotels in the southern Catskills tend more and more to be those that can accommodate over 500 guests, with revenues large enough to support big-name entertainers and impressive sports facilities. But even while this trend is apparent over the last 20 years, there are many smaller resorts flourishing whose clientele seeks out the small-scale and quiet atmosphere that an old inn or updated farmhouse can provide.

This duality can be expanded: where the larger hotels seem bent on suppressing their distinct ethnic identities in favor of a more cosmopolitan "melting pot" image, many more small places clearly emphasize a specific ethnic orientation where the vacationer can find reminders and cuisine of his ancestral homeland. The sleek and urbane architecture of the biggest places, updated and expanded yearly, is complemented by smaller



Not alone with nature at Grossinger's poolside.

houses that have held on to architectural styles of other generations—even while they too go through the continual process of refurbishing. What seems a "modern" taste in entertainment—nightclubs with TV stars performing for a nonparticipatory audience—is complemented by more traditional self-generated entertainment.

Highly organized resorts providing a maximum of recreation facilities for the vacationer seem to be the general model for the future. But it is far from certain that this modernity is preferred or inevitable in the resort experience. The fact that Catskill resorts can offer not just a physical setting but a choice of time—the choice of, in a sense, going back to a set of experiences and a rhythm that feels un-modern—may guarantee their continued desirability. □

### Credits:

**"Resorts of the Catskills"** is a document and exhibition project conceived by John Margolies for the Architectural League of New York, and the Gallery Association of New York State that will travel state-wide and nationally beginning in 1979. The project began as a video-taped documentation by Margolies of the hotels in this resort area; with additional funding, the research of social and architectural historians has been included.

**Project director:** John Margolies.

**Research director:** Elizabeth Cromley.

**Research Associates:** Brian Danforth, Deborah Gardner.

**Photography:** John Margolies.

**Video Directors:** Skip Blumberg and John Margolies.

**Video Associates:** Andy Aaron, Bill Marpet, Esti Marpet.

**Exhibition Design:** Kevan Moss.

**Consultants:** Jonathan Barnett, Alf Evers, Neil Harris, Thomas H. Miner, Joseph O'Grady.

**Sponsor:** The New York Architectural League.

**Exhibition circulation:** Gallery Association of New York State.

**Funding:** New York State Council on the Arts, New York Council for the Humanities, The Architectural League of New York, John R. Jakobson Foundation.

# A star for Tinseltown

**A hotel complex is designed to give a focus to a city without a downtown. Architect John Portman has invested more than design skills into making this an overnight economic success, if not entirely an architectural coup.**

Driving south on the Hollywood Freeway, the driver eases right to catch the Harbor Freeway turnoff. Slipping easily around the bend, the downtown Los Angeles skyline unfolds before him. As he approaches the towering rectangles of glass and granite a glistening sculpture of five silver cylinders captures his attention, a unique cluster of mirrors reflecting and refracting the surrounding environment and visually dominating the landscape. Although half as tall as the neighboring rectangular towers, the 30- to 37-story high Bonaventure Hotel designed by John Portman & Associates is the center of attention. The dark curtain walls of the surrounding conservative corporate headquarters serve as a cyclorama setting the stage for this main event, this new star on the Los Angeles horizon.

In a city where travel on the freeways is the norm, the approach to the Bonaventure is truly masterful, with the soft, curving exit ramps anticipating the curvilinear forms of the building. But as the driver begins to make his final approach, the shining star begins to fade. The hotel entrance itself is a small hole punched in a vast four-story-high wall of concrete. What happened to touches like the long elegant *porte/cochère* with the bold, colorful banners hanging overhead at Portman's Hyatt Regency entrance in San Francisco?

This unassuming entry seems all part of the scenario, however, in which the unsuspecting traveler enters an ordinary looking set of double doors only to be swept off his feet by the drama of the eight-story-high interior lobby that awaits him. Even if this was his intention, Portman could have made his entrance a little more inviting both to the client behind the wheel and to the pedestrian.

While the entire complex works well as a landmark and visual focus, the vast con-

Photos: Wayne Thom



"These new [Portman] lobbies are not ceremonial stage sets or retreats for the tired and expectant. . . . No longer ante-rooms or border areas, these lobbies are the climaxes, the sum totals of their respective buildings. They may soon need lobbies of their own. . . . They exemplify the closed landscapes that are increasingly being substituted for the wide open visions that used to form the American dream of space." Neil Harris ("Living with Lobbies," *New Republic*, May 8, 1976)

"One way to lure a convention to the downtown of a large American city is to make sure they will never have to go out into it." Calvin Trillin ("Atlanta Ga. A traveling person marooned on a cocktail island," *The New Yorker*, March 29, 1976)

crete podium on which the towers sit does not respond well to its environment. The pedestrian bridges that link the hotel on the 3.5-acre site to the surrounding second-level parks should be a more successful form of entry when the pedestrian system is completed. But the street access is a serious drawback that weakens the potential of the entire scheme.

At the very nucleus of the Bunker Hill Redevelopment area, the Bonaventure Hotel, with its 1318 rooms, 150 suites, 77 shops and eight restaurants, is a \$100 million transfusion that, it is hoped, will help restore the health and vitality of downtown. From all indications to date, it is doing exactly that. With hotel rooms and conventions booked through next year, the old Portman magnetism still draws a crowd. How many of those first guests will return, and whether the hotel will continue to attract visitors, not only from throughout the county but from the suburbs of Los Angeles as well it remains to be seen.

Portman has proved his genius for assembling commercially profitable developments where the traditional real estate man could see only failure. He has proved that indeed an architect can and should be a developer though he contends "First and foremost, I am an architect." Although Portman will not disclose how much equity he has invested in the Bonaventure, he did act as his own developer and arranged for the permanent mortgage, eight-year financing, and other equity participations, plus its management by Western International Hotels.

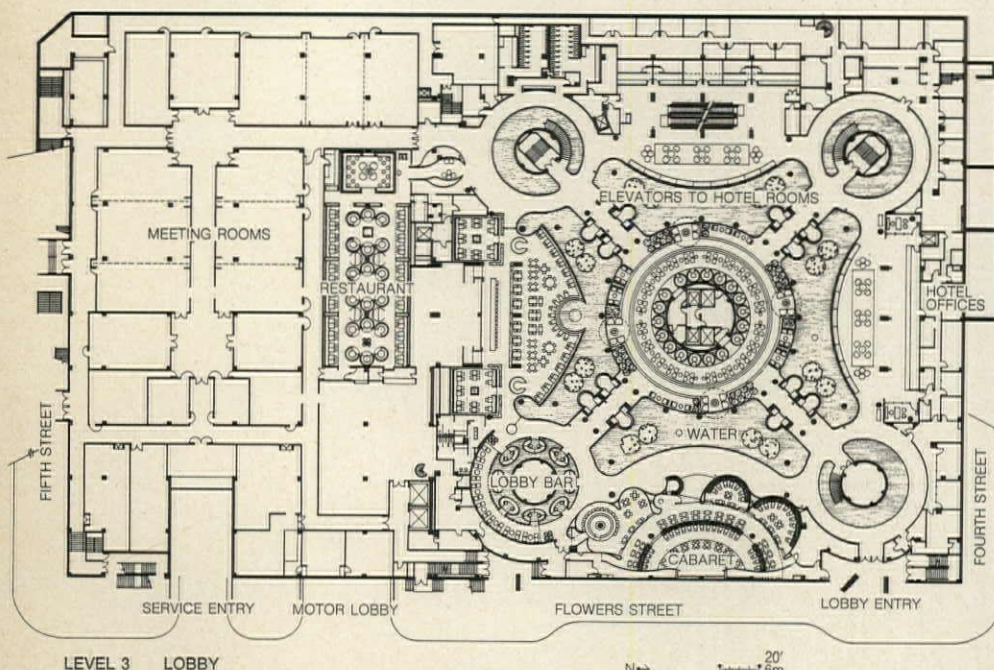
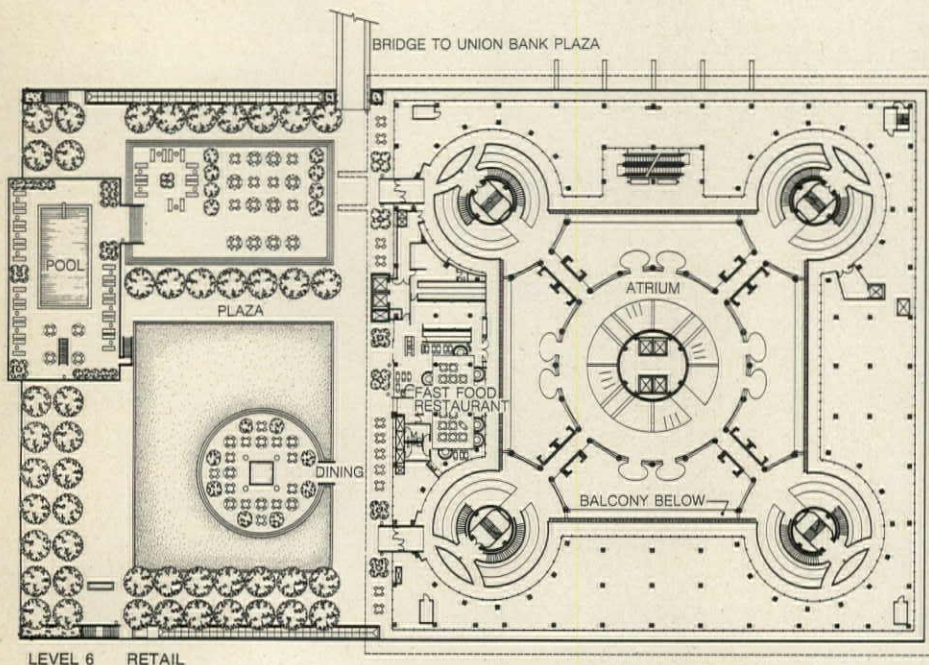
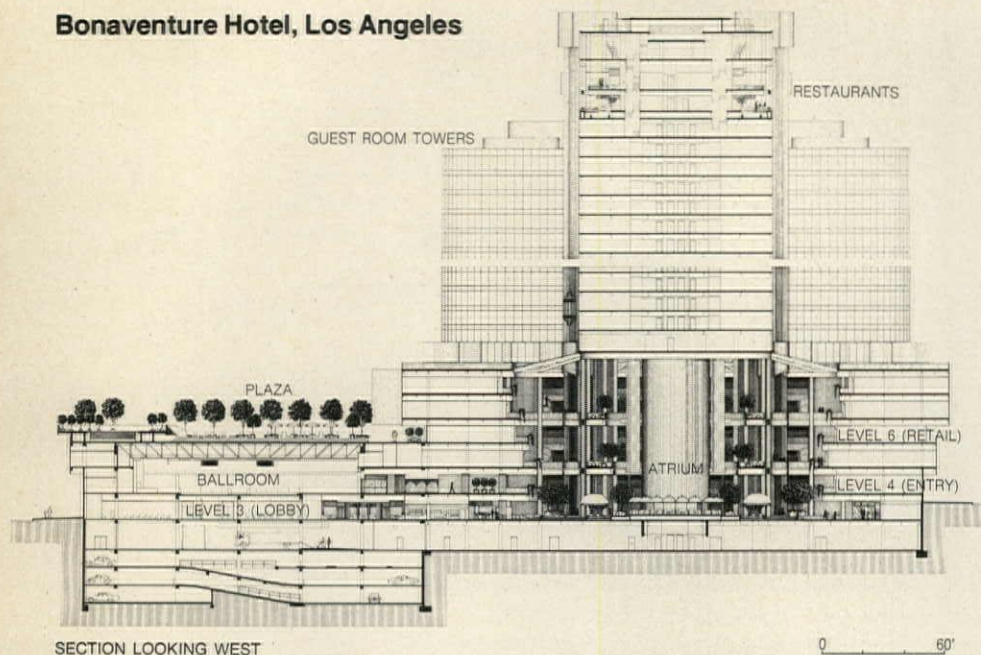
John Portman is undoubtedly one of the wizards of 20th-Century real estate development, but the question remains: how



Lobby on level three showing Lobby Court Restaurant; view from plaza over podium (below).



## Bonaventure Hotel, Los Angeles



important is his contribution to American architecture? Jonathan Barnett pointed out in the book he co-authored with Portman, (*Architect as Developer*, McGraw-Hill, 1976), "architects tend to bestow on Portman the same kind of suspicion that the literary world reserves for a best-selling novelist. Commercial success and art are not expected to go together."

Portman's buildings do tend to play to the tastes of Middle America, without any overt attempts to challenge their sophistication. But he has certainly taught us all that great space does not have to be expensive and that, done correctly, it can create awe, attract people, and vastly improve the quality of urban life. To measure the quality of the Bonaventure's architecture, one is tempted to compare this 1,524,664-sq-ft precast-concrete frame hotel with sandblasted concrete and stucco walls and bronze glazing with similarly wrapped, but diametrically opposed United Nations Plaza Hotel by Kevin Roche and John Dinkeloo, or perhaps to Philip Johnson and John Burgee's IDS Center in Minneapolis.

The symmetrical cluster of columns and cylinders in the Bonaventure Hotel creates a large and certainly exciting space, but it is disorienting and lacks the clarity and focus Portman achieved in San Francisco. It is clearly not Portman's most successful space and is a pale stepchild when compared to the work of Roche and Dinkeloo.

Similarly, Bonaventure suffers in a comparison with the IDS Center, the hierarchy of spaces and the deft hand with which Johnson and Burgee integrated the high-rise tower with the skylighted Crystal Court below and with the total environment. This hotel's myriad columns and continuous gray concrete curving staircases serve only to confuse, rather than strengthen, the impact of the central space.

The Bonaventure Hotel is a labyrinth of such complexity that hotel guests have complained justifiably about going up into the wrong tube and wandering around literally in circles. Recent attempts to identify the four identical towers with narrow colored banners proved a feeble gesture when viewed against the vast canyons of the central space. Bold architectural spaces designed for masses of visitors require a clear, organized graphic communications system and a strong visual focus, both of which are lacking in the Bonaventure Hotel.

In plan, the Bonaventure is composed of four cylindrical towers clustered around a central tower that rises above the others to a two-story restaurant and revolving bar. The concept of four cylinders around a central space was first employed by Portman in Chicago's Hyatt Regency O'Hare where the towers were extended out from the corners of a square.

The theme of a strong central tower rising out of a glass-covered space of cantilevered conversation pods and reflecting pools formed the basic part of his successful 70 story Peachtree Plaza Hotel in Atlanta. Portman employs a similar approach in De-

troit's Renaissance Center, with the introduction of four additional towers. At Bonaventure they are pulled together, creating a much more dynamic, but sometimes confusing, central space. As the four levels of shops at Bonaventure begin to fill in with colorful displays and a strong graphic treatment, one hopes that the present sense of being in a labyrinth will be replaced by a sense of place ordered by the different visual images of the storefronts.

The essence of Portman's architecture, however, is not found in an analysis of his aesthetic systems—or in his professed admiration of Frank Lloyd Wright's diagonal geometries and Louis Kahn's interlocking squares and diagonal forms. It is found in the eyes of the people who visit his buildings and in the exhilaration that they experience. To sit on a cantilevered island listening to the softly rippling water and watch the twinkling elevators launching themselves on yet another ethereal journey through the glass roof to the sky above is a rare experience. Or to board the spaceship oneself and travel up past the layers of colorful shops through the concrete collar in the skylight and then to see the lights of the city spreading out below like so many stars, is almost a transcendental flight.

As John Portman describes it, his role is "to create a grandeur of space, almost a resort, in the center of the city." He has achieved this before, and he has done it again in Los Angeles. On a recent visit to the City of the Angels, Portman had the occasion to ride the elevator at the Bonaventure with two elderly ladies seasoned with the glow of Southern California. He described how one turned to the other in joy saying, "Gee, this is better than Disneyland." What more can you ask?

[Michael Franklin Ross]

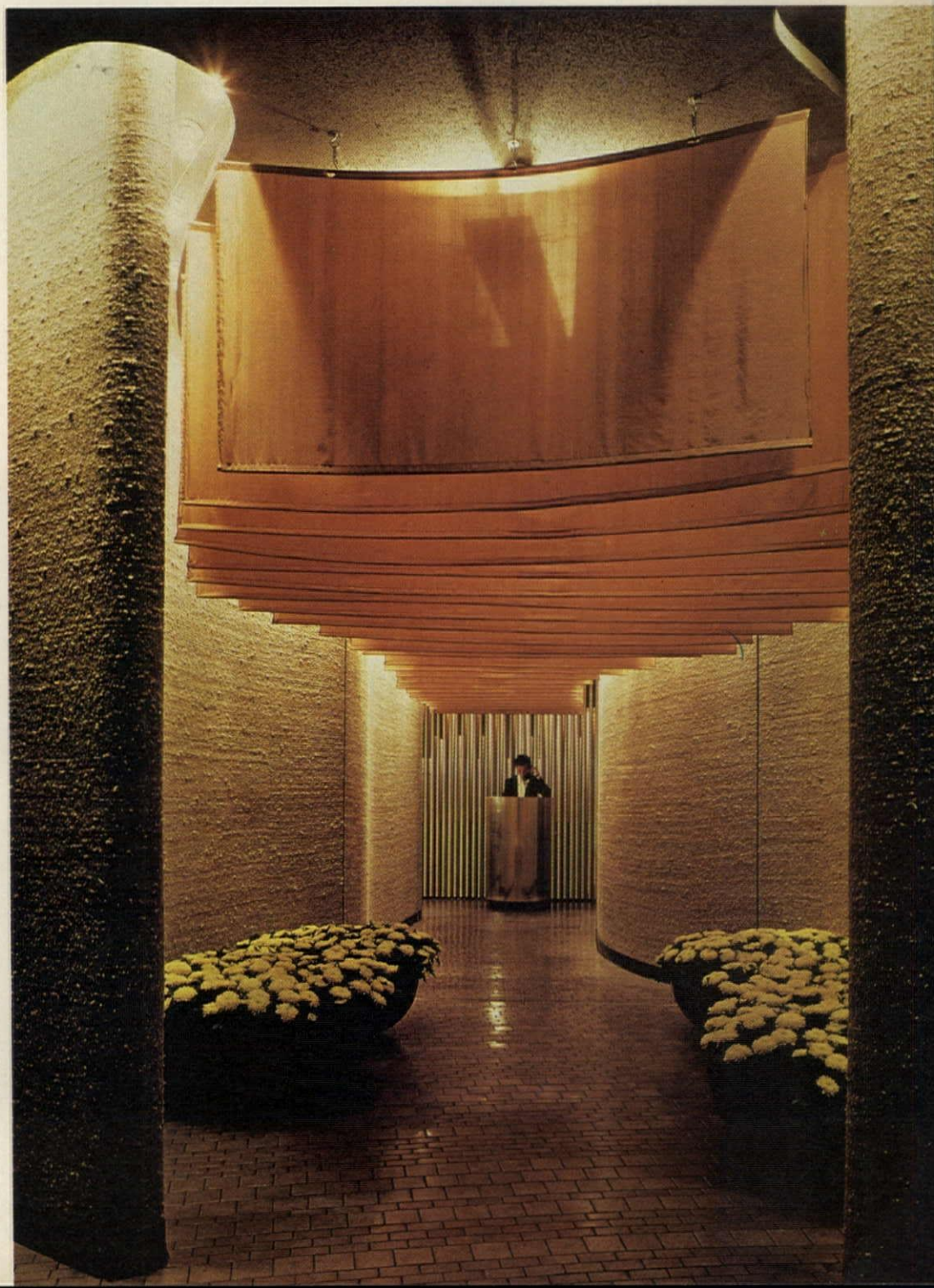
Photos: Alexandre Georges



Bar in Beaudry's (above), guestroom (below).



Bar 35th floor (above); Entrance Beaudry's Restaurant (below) on third level.



# Bonaventure Hotel, Los Angeles



Cabaret on third (lobby) level (below); view of lobby court from third level (above, left) and from seventh (retail) level (above, right).



## Data

**Project:** Los Angeles Bonaventure Hotel.

**Architect:** John Portman & Associates, Architects and Engineers, Atlanta, Ga.

**Program:** hotel 1318 rooms, 150 suites, four levels of retail space with 77 stores totaling 143,000 sq ft, eight restaurants, totaling 21,000 sq ft, in a 1,524,664-sq-ft complex of five towers, including a central one 37 stories high plus four 30-story towers.

**Site:** 3.5 acres, one city block, in the Bunker Hill section of Los Angeles.

**Structural system:** steel frame, structural precast concrete frame and floors, sandblasted concrete walls. Reinforced concrete podium.

**Mechanical system:** central heating and cooling supplying entire project with chilled water and steam.

**Major materials:** cast-in-place and pre-cast concrete, stucco, bronze reflective glass. (See Building materials, p. 8.)

**Consultants:** Everett Conklin-West, landscape architects; John Blum & Associates, structural engineers; Britt Alderman Engineers, mechanical engineers; Morris Harrison Engineers, electrical; William C. Lam & Associates, lighting; Rowley-Kahler Associates, Inc., acoustics; John Portman & Associates, interior design.

**General contractor:** C.L. Peck in joint venture with Henry C. Beck Co.

**Interior contractor:** Peachtree Purchasing & Western Service & Supply Co.

**Client:** Los Angeles Portman Co., % John Portman & Associates; hotel operated by Western International Hotels.

**Costs:** withheld by architect and client.

Detroit Plaza Hotel, Detroit, Mi

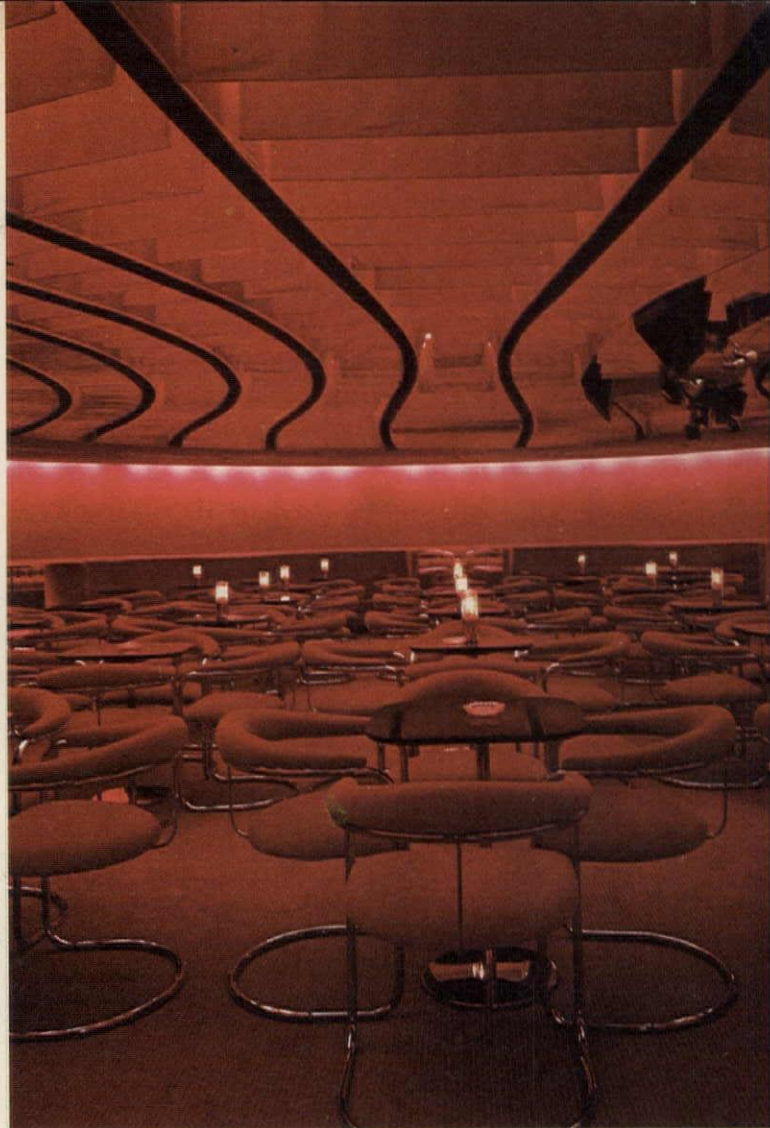
# Megaform comes to Motown

Bruce N. Wright

**An architectural extravaganza is hoped to return vitality to the doyenne of decayed downtowns—Detroit. But can architect John Portman draw crowds and keep them there? Will the transplant live but the body die?**

To get there by car is the easiest thing in the world. Just follow any major freeway heading downtown and you run smack in front of it when the freeway ends. Nothing could be simpler, until you get out of your

Photos: Alexandre Georges



Cabaret (above), lobby level (left), The Summit, 71st floor (below).



## Detroit Plaza Hotel, Detroit, Mi

car. From then on it's a pedestrian's *bête noire*, with entrances poorly identified and obstructed by busy ring roads carrying cabs, buses, and limousines past the pedestrian like a raging river, one-foot-high curbs at the actual entrance, poor directional signage in parking areas and within the building itself, and a confusing array of ramps, escalators, concrete spiral staircases, tubes, concrete columns, elevators, and many other concrete shapes that occupy the central arena of Detroit's new Renaissance Center.

Restaurants and lounges (13 of them), offices (four 39-story towers), a 1400-room, 73-story Detroit Plaza hotel and an infrastructure that houses retail shops, ample convention facilities, and public spaces, add up to the largest privately financed real estate development in history. But the glass and concrete building designed by John Portman & Associates of Atlanta for the riverfront of this decaying city does not do what was intended. It does not create a link with the existing city or relate to it in anyway. Nor does it succeed as a "thing apart," standing alone as an example of formalistic architecture. Its very nature required close interaction with a dense urban setting to be successful. But Renaissance Center occupies that unhappy area in between.

The RenCen, as it is affectionately called by Detroiters, is a 14-acre concrete podium on a 32.5-acre site, with four octagonal glazed columns at its corners and a single glassy shaft in the center. It was designed to rejuvenate the dying business section of downtown and serve as a catalyst for the rebirth of the city. But the \$337-million megastructure, inspired by Henry Ford II, in a physical sense ignores the existence of the city it is meant to revitalize. Furthermore, it blocks a perfectly good view of the Detroit River for all except those fortunate few with an office or hotel suite on the south side (Detroit is north of Canada at this point on the river). The project comes off like a snobby rich kid shying away from low-class neighbors.

In designing his 2.8-million-plus-sq-ft complex, Portman has relied upon past successes, like Peachtree Center, Atlanta, and Embarcadero Center in San Francisco, for his inspiration. This latest example of carnival architecture was executed with the usual Portman flair. It includes a large central enclosed atrium with pond and waterfall, exposed elevator shafts, large sculptural pieces and abundant greenery, plus three- and four-story escalators, spiral staircases, ramps, and the Portman signet, oval "pods."

The lobby's Piranesian space is the most attractive part of the complex and naturally draws the largest crowds. The visitor can move through this six-level main arena in many directions: on the perimeter, staying on one level and wandering off into many (currently empty) corners, or vertically by means of the spiral staircases



Photos: Alexandre Georges

Cocktail pods, The Summit rooftop restaurant, 72nd floor (above).



Lounge around core (above); entry to The Summit (above right); La Fontaine restaurant (below).

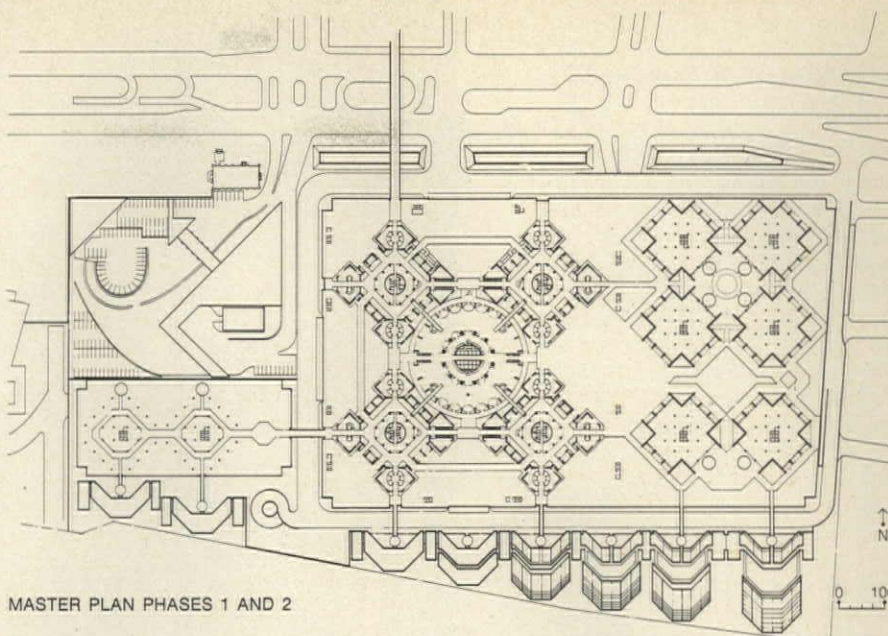


(down), escalators (up) and short two-story elevators in the office quadrants. On the main plateau, one has the choice of trying to shop in the "Fashion Circle" (four high-fashion stores to date) or bar-hopping on the lower level where a revolving platform is encircled by the pond and fountains. All of this activity is set against much rough-textured concrete, alternating with vinyl-covered walls and full-height doors. Unlike some of its predecessors, the hotel elevators, enclosed in a central concrete shaft, do not open up to any spectacular views. That show is reserved for a free-standing glass column on the outside edge of the hotel, with express trips to what the owners claim is "the world's largest revolving rooftop lounge and restaurant complex."

The four 39-story office towers are steel framed with a tinted glass and aluminum curtain wall. The hotel tower is reinforced concrete, except for the top three floors, housing the revolving restaurant, which were steel-framed to speed completion before an approaching winter. The hotel curtain wall, in contrast to the office towers, has reflective glass. The glass skin is meant to quietly link the complex with other city façades and present a fresh face to the city. Unfortunately, the building neither blends in with the older brick and stone structures nor differs greatly in outside appearance from the newer glass and steel suburban Detroit office towers it challenges. The architectural tricks have become too facile and though RenCen is new, one has a strong sense of déjà-vu.

### Suburbia enlarged

Taking its place alongside the many large glass structures that every American city seems intent on collecting, the Renaissance Center could be destined to become one of what William G. Conway, writing in the *Saturday Review*, calls "urban dinosaurs." Conway cites examples in other cities, most notably Atlanta and L.A., where similar megastructures have all but bankrupted their owners and generally failed to revive the central city—in some cases actually speeding the deterioration and abandonment. "Far from lending strength to downtown areas, these complexes create little more than a suburban island in mid-city," he says. Detroit's RenCen appears to be such an island. A recent *Detroit Free Press* article this fall proclaimed: "Detroit's Wall Street Detours to Renaissance Center," and First Michigan Bank President John Martin predicted that RenCen would probably become the financial hub of Detroit. What this does is to encourage the evacuation of much older portions of the CBD, thus hastening rather than slowing the decline of the downtown district. "More people have moved out of the prime buildings than have moved into them from the lower-rent districts," Eldon K. Andrews, president of an industrial and commercial real estate firm in Detroit said in the *Detroit News*. "What it ultimately means is that you're going to lose all your Class B buildings."



MASTER PLAN PHASES 1 AND 2

View of complex from Detroit River (below); master plan showing next phases (above).



Photo: Balhazar Korab

## Detroit Plaza Hotel, Detroit, Mi

Although the RenCen has been accused of being, conceptually at best, a suburban development misplaced, there is the chance that it may not offer an attractive alternative to suburban shopping. It seems more plausible that visitors come now more for curiosity's sake than for routine shopping, what with few retail shops as incentives, plus years of built-in fear of downtown (Detroit has one of the highest crime rates in the nation). RenCen leasing manager, Michael L. Moran says that 60 percent of the 340,000 sq ft of retail space is leased or committed, yet only 20 out of 100 shops are actually occupied. He cites similar figures for the office blocks with 80 percent of the total 2.2 million square feet leased or committed, but only 40 percent yet occupied. The hotel, by contrast, appears to be doing very well. The facilities are booked until 1985 and the hotel room occupancy itself is "well ahead of expectations" says Moran. But conventions do not bring the local citizen downtown. It's the plaster board walls hiding vacant space that the suburban visitor sees, not the bookkeeper's ledger.

"Suburban amenity is not what people seek downtown," said Jane Jacobs, speaking about vitality in cities. "The whole point is to make the streets [of downtown] more surprising, more compact, more variegated and busier than before—not less so." The RenCen still does not tackle this problem. Located six to seven blocks away from the heart of Detroit, and separated from it by ten-lane Jefferson Avenue, and finally by large concrete berms housing HVAC equipment, the center contributes neither volume and variation to the ambulatory experience, nor surprise. The sidewalk here, like its suburban cousin, has been forgotten; anyone strolling downtown wishing entrance to the place would be hard pressed to find one. Where are the signs, the enticements of merchandise fancifully displayed in windows, drawing the pedestrian in to shop? Unless one knew what was inside to begin with, he'd have no idea what the center had to offer. A bundling together of glass tubes, though aesthetically pleasing, does not express "shopping." And inside the same communication problem is encountered: where to find anything?

The geometry of the structure is such that it tends to repeat itself and as a consequence the spaces become too regular. They appear to have the same quality to them throughout; hence the confusion.

Frank Lloyd Wright was noted for his strong use of geometry but he never allowed it to control the design to the point where the variety of space, surprise and quality of experience were marshaled into an easily reproduced formula. A development on this scale in a city such as this cannot afford to be prosaic. What difference would it make if it were built in suburban Dearborn, as another Ford-inspired project already is? Or why not put the



View of "world's tallest hotel" at Renaissance Center from Jefferson Avenue.

RenCen on wheels, like a television ad campaign cajoles us, and have the center drive out to us?

### Renaissance roots

Several explanations are offered as to how the Renaissance Center came about, but Ford's own is the most convincing. He claims that, not long after the riots of 1967, he, James M. Roche, then chairman of General Motors, and several of Detroit's industrial leaders who were gathered together for a publicity photo, challenged him to do for Detroit what he had done by building Fairlane Center for his own Dearborn headquarters of Ford Motor Company. He accepted.

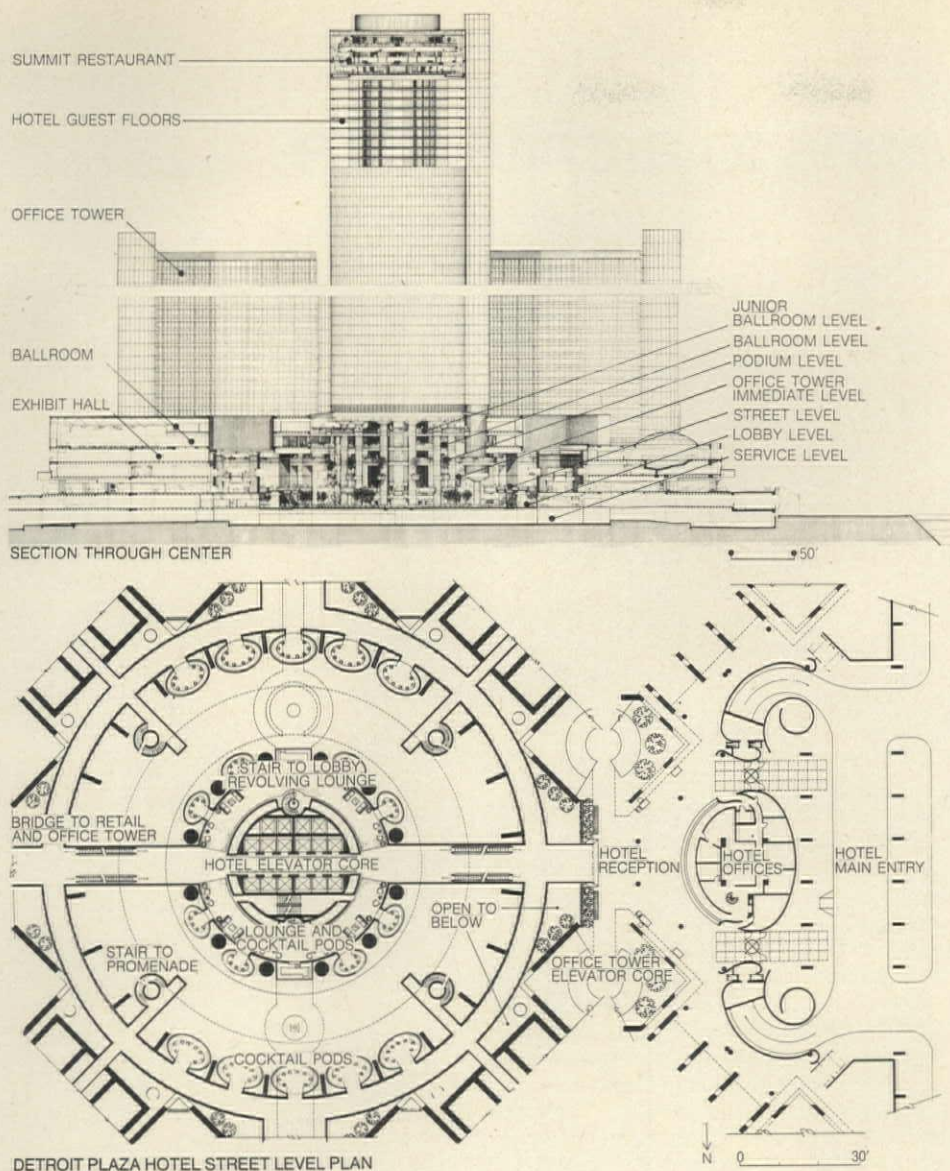
Even Henry Ford couldn't do it alone, so he enlisted the financial aid of 51 major corporations, each with substantial interest in the Detroit area. These included the four auto companies and such famous names as Burroughs, Bendix, Firestone, Park-Davis, Western International Hotels, and B.F. Goodrich. They amassed \$37.5 million in equity capital—Ford Motor and GM each contributing \$6 million—to start the project. Original construction cost estimates in 1971, when the project was announced, came to \$175 million for the first

phase. But by groundbreaking in early 1973 this figure had already been revised upward to \$237 million. With a sudden blow from the Arab oil embargo, spiraling construction costs and inflated financing rates, the project faced a premature death by the middle of 1974. Late in the fall of 1974 Ford announced that the project would need an additional \$100 million to complete the center and asked the original investors to double their equity investments. The final cost of the Renaissance Center came to \$337 million with \$114 million in equity investments.

The land was purchased over a period of years from Grand Trunk Western Railroad, *The Detroit News*, and Robin Hood Flour Co., then assembled into a 32.5-acre site along the Detroit River and cleared by late 1972. The developers had the land, formerly zoned for a mix of residential and industrial uses, rezoned to multiple uses for planned development. This action differed from the city's earlier plans for that portion of the riverfront.

In its published master plan called "Detroit 1990," Detroit's City Plan Commission stated in 1970, "The River must be made a part of the city, part of the life of the people. And the key to this . . . lies in the

Photo: Balhazar Korab



accessibility of the edge." Rather than opening up the riverfront with parks and pedestrian greenways as proposed by the city plan Commission, RenCen cuts it off. The actual river edge is now used as temporary surface parking for the center, but if the project is completed as originally designed, even this severely limited public access (parking rates are among the highest in town) will be precluded.

The project plans called for a major convention facility which, with a 28,500-sq-ft hall, is now built north of the complex along the river, plus office towers, a major hotel, commercial retail space, and condominiums or rental apartments. Because of the recession and increased labor costs, the project was drastically cut. The developers logically chose to make their opening statements with the more spectacular parts.

Three more phases are planned, but no schedule as yet has been announced. Phase two will include condominiums along the land between the riverfront and the present center. Phases three and four project six to eight mid-rise office towers.

The disappointing results are really not Portman's fault; he did his job well, accepting the premise that what Detroit needed

was one of his buildings. Instead, the blame must be shared by the developers and the city itself. In his book *The Architect as Developer*, co-authored with Jonathan Barnett (New York, McGraw-Hill 1976), Portman discusses what he feels makes his buildings work, and ironically pinpoints the problem RenCen faces when he says, "You do not design a city in the way that you design a building; but you can make a city a humane environment, not just in isolated places, but continuously throughout its whole fabric." The key phrase here is "throughout its whole fabric." The RenCen is an isolated place and it is as much the lack of strong city planning guidance as the architect's conscious provision of concrete "buffers" (there's a real contradiction!) that makes it so.

Perhaps the city fathers were so happy to get any development after the devastation of the 1967 riots that they were willing to recant previous planning recommendations and zoning ordinances. The planning interests of Detroit may not have been well served by a sense of obligation or guilt, coupled with the opposite desire for physical security, which—along with architectural visibility—was expected to promote economic viability.

There are definite aspects of the center which make it pleasant—the use of water, the excitement of people moving on several levels, and the fact that Detroit has had damn few new buildings downtown in a long time. The last major new hotel added to central Detroit was built over 50 years ago. But the design should have gone further in its declaration of a rebirth to the city. It could have gone further in expressing community strength by actually building on existing resources, by acknowledging the older city and possibly improving what was once a vital metropolis. The city has even now announced plans for another primary development downtown, a retail hotel complex, also privately financed—this time within the heart of the CBD, tying in with the only major department store left, J.L. Hudson's, and utilizing the most active piece of land in central Detroit, the Kern block. This project, tentatively called Cadillac Square Center, has the potential to become the equivalent of Minneapolis' IDS Center, a project that brings a focus to a confused business district and adds spark to city life. Let's hope it turns out to be more promising for Detroit than the Renaissance Center. □

**Author:** Bruce N. Wright is an architect working in Minneapolis and a free-lance writer whose work has appeared in P/A.

#### Data

**Project:** Renaissance Center, Detroit, Mi.

**Architect:** John Portman & Associates, Architects and Engineers, Atlanta, Ga.

**Client:** Renaissance Center Partnership (Joe Derkowski, manager).

**Program:** hotel (1400 rooms), office towers (2.2 million sq ft) and retail shopping mall with 100 shops, 13 restaurants, convention support facilities in complex with central (hotel) tower 73 stories high, office towers 38 stories. Phase two, not yet in construction will have smaller office towers and residential buildings.

**Site:** 32.5 acres on riverfront at the edge of the central business district.

**Structural system:** office towers are steel framed, with tinted glass and aluminum curtain wall; hotel tower is reinforced concrete frame except three-story steel-framed revolving restaurants; floors are concrete on metal decking.

**Major materials:** cast-in-place concrete, precast resinous cement panels, steel, reflective glass. (Building materials, p. 114.)

**Mechanical system:** central heating and cooling supplying project with chilled water, steam.

**Consultants:** John Grissim & Associates, landscape architects; Britt Alderman Associates, mechanical; Morris Harrison Associates, electrical; William Lam Associates Inc., lighting; Acoustical Consultants Inc., acoustics; Hauser Associates, graphics and signage; John Portman & Associates, interiors and structural consultant.

**General contractor and construction manager:** Tishman Construction Co.

**Interior contractors:** Western Service & Supply.

**Cost:** \$337 million.

# Habitat as a means to architecture

## The work of Adele and Antonio Santos deals with reconciling the differences between the values of users and formal traditions of Modern Architecture

Three years ago, before Adele Naudé Santos and Antonio de Sousa Santos came to the United States to join the faculty at Rice University in Houston, Tx, they gave up a promising, ten-year-old professional practice in South Africa. In that partnership they concentrated virtually exclusively on issues of housing, and from that period seven projects are presented here.

In explaining the nature and content of this work, it is helpful to know something of the background of Adele and Antonio Santos. She was born in South Africa but is a British citizen who attended the Architectural Association in London. She holds master's degrees in architecture from Harvard and in city planning from University of Pennsylvania. He is a Portuguese citizen born in Mozambique who holds an architecture degree from Cape Town and master's degrees in architecture and in city planning from University of Pennsylvania. Both worked for David Crane & Partners in Philadelphia, where their own practice officially began. Urban design and architecture together, both in practice and in teaching, have led to the concept that the physical environment forms a continuum across scales. The Santoses' theoretical position has its origins in problems of housing, where buildings are seen less as abstractly conceived objects and more as micro-environments, even in the most modest of individual buildings.

### The use of user needs

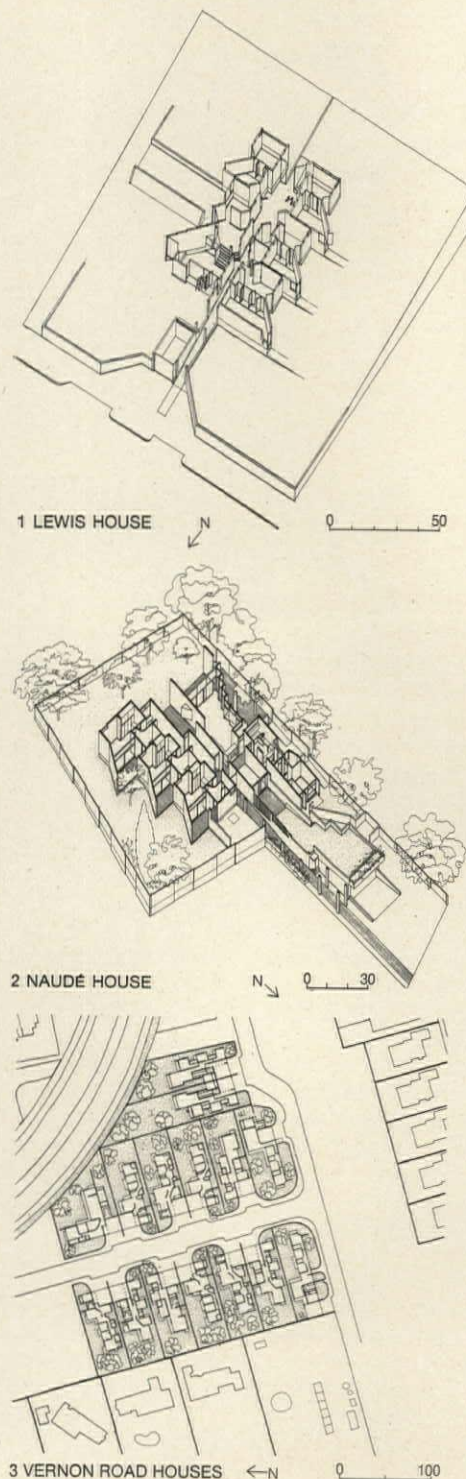
An essential feature in their approach has been the extent to which so-called "user needs" operate within the design process. In contrast to the position that behavior can be controlled or at least strongly influenced by simple functional schemes of a prescriptive nature, the Santoses believe that behavior is essentially unpredictable and that a more fruitful objective is to remove or reduce potential functional conflicts and offer

a range of environmental conditions that would not constrict behavior. In this fashion, the design process must be circumstantially responsive to patterns of use. While user needs and values, systematically interpreted, become important determinants of programs, they also become important determinants of form, providing not only multiple conditions for use, but also multiple opportunities for interpretative adaptation by the user.

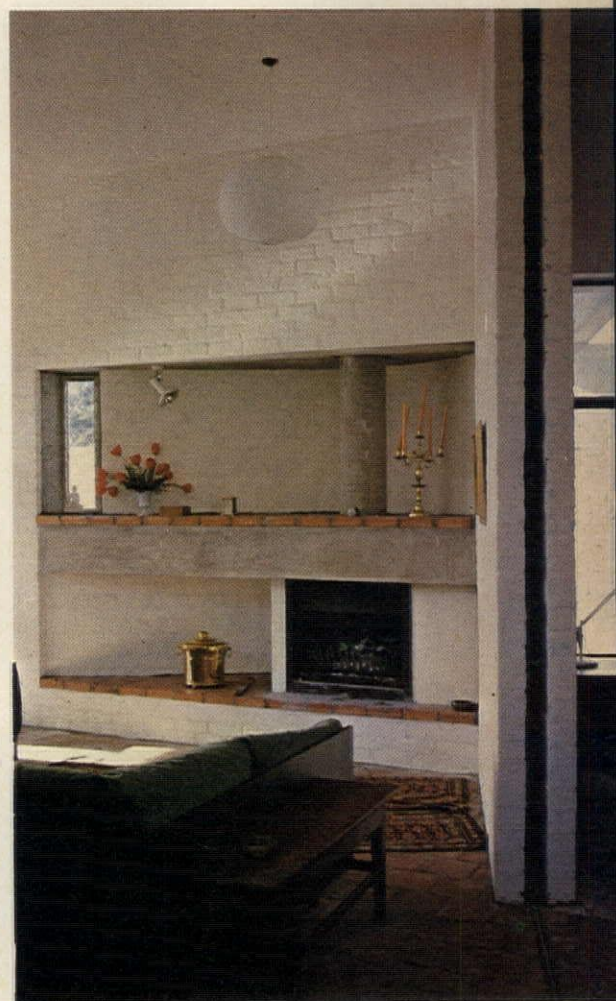
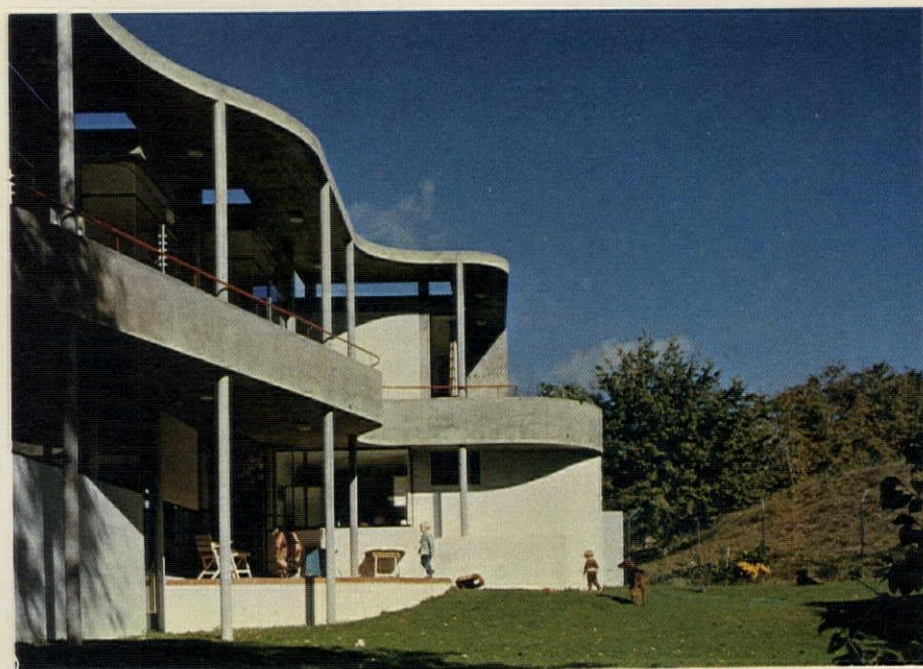
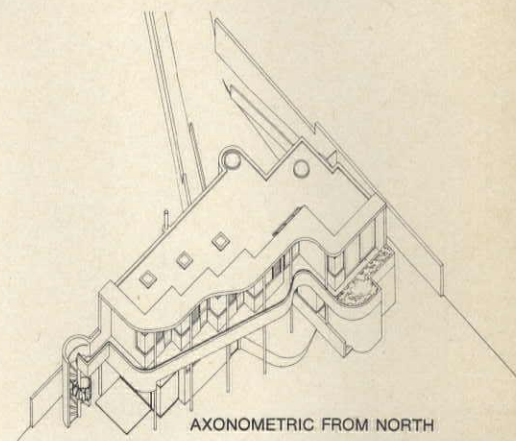
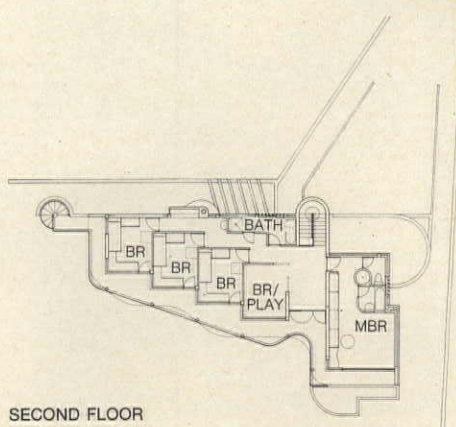
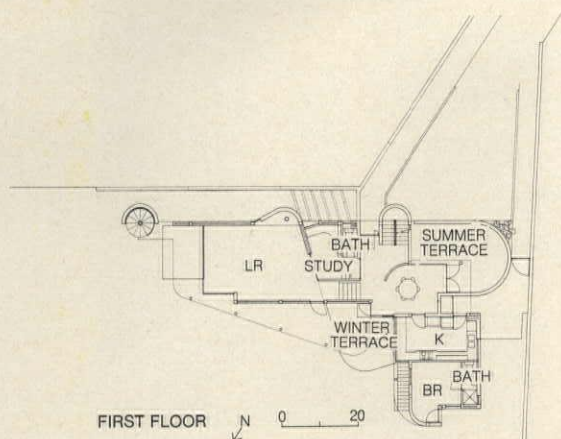
Yet, the basis of this process should not be interpreted simply as a variable response to circumstances. A greater part of the thread that runs through the projects is due to the essentially normative position described by the resolution of particular programmatic/formal synthesis, if not in actual total *partis*, then in fragments that may appear in differing forms.

The linear spine seen in the seminal project, the Lewis House of 1965 (illus. 1), established a principle of organization that operated at a number of levels. Essentially, it distinguished "public" from "private" areas, although its actual functioning, depending upon user and purpose, would vary across this spectrum. With the Naudé House of 1967 (illus. 2) the principle has been refined. It becomes more complex and elaborated in the individualization-within-a-theme of the Rowan Lane grouping of 1973 (p. 66), where the concept no longer operates purely in plan, but also in section and with respect to both internal and external relationships. Finally, the inevitable thread can be perceived in the cluster plan for the Vernon Road subdivision of 1970 (illus. 3). While this one particular principle can be clearly seen through the sequence, it is in the Vernon Road scheme that another pattern is nearly equally apparent, the pairing of carports and garden walls to increase visual scale toward the street for the detached houses. A comparison with the housing at Kromvlei (p. 68) shows this principle at work, both in organization and form, even though they are barely one-fifth the cost of the former.

The normative nature of these design decisions can also be seen in fragments and details that are elaborated and ma-



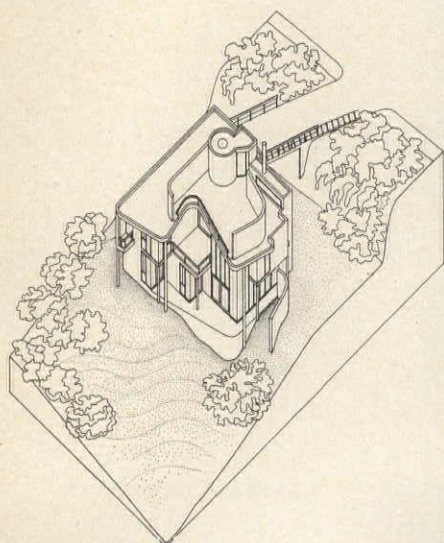
# Stekhoven house



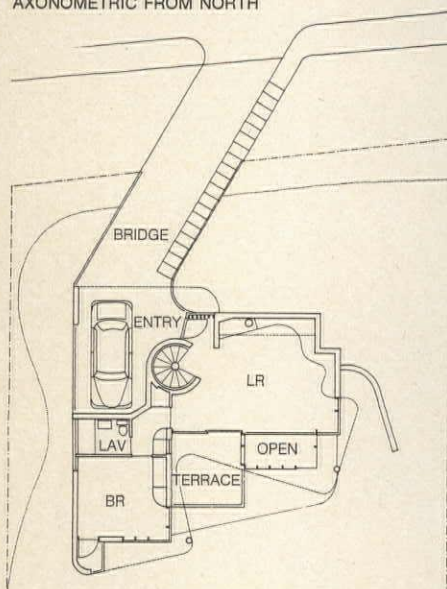
At the Stekhoven house (1973) in Newlands, Cape Town, South Africa, a blank white wall faces adjacent properties to provide privacy at both levels (above left), while at the opposite side of the house large glass areas protected by undulating loggia and access terrace open the house to private yard, sun, and view (left). Inside (above), a sliding wall separates the living room area from an adjacent study.

Profile: Adele and Antonio Santos

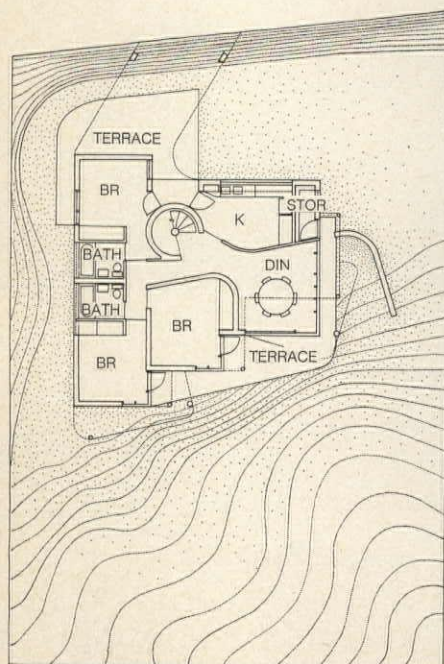
# Shear house



AXONOMETRIC FROM NORTH



SECOND FLOOR

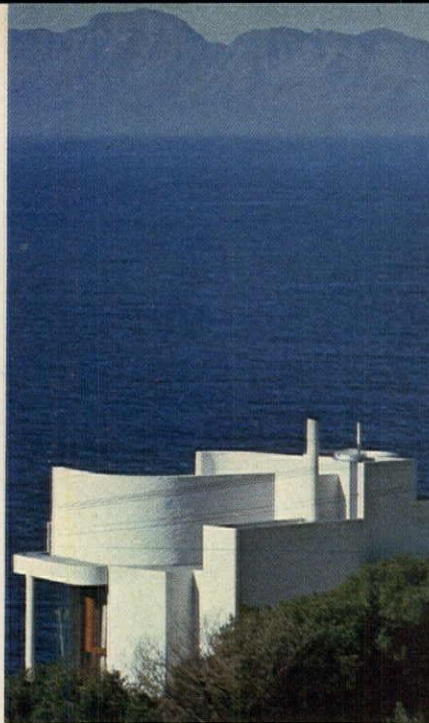


FIRST FLOOR

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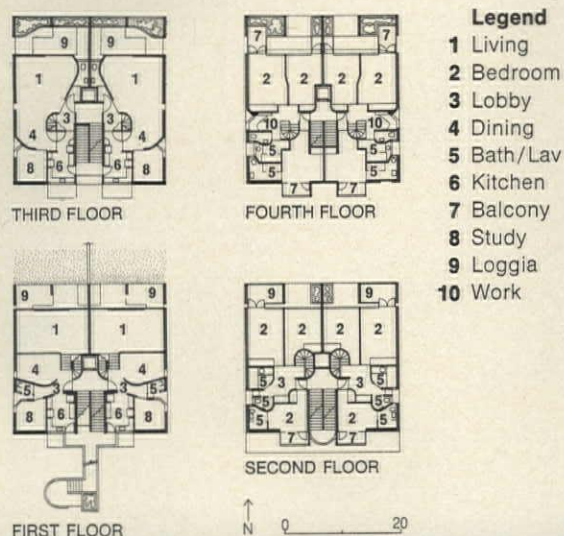
Solid walls protect the back of the Shear house (1973) in Simonstown, Cape, from strong winds.



The house is nestled against steep hillside, but northwest side (below) opens to distant view.



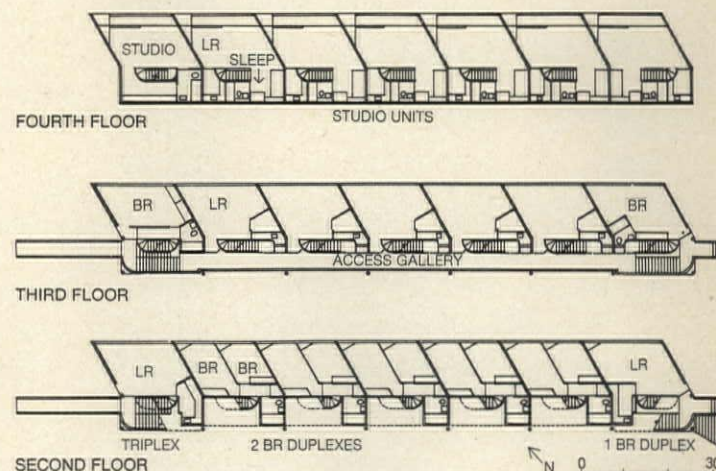
## Scott Road apartments



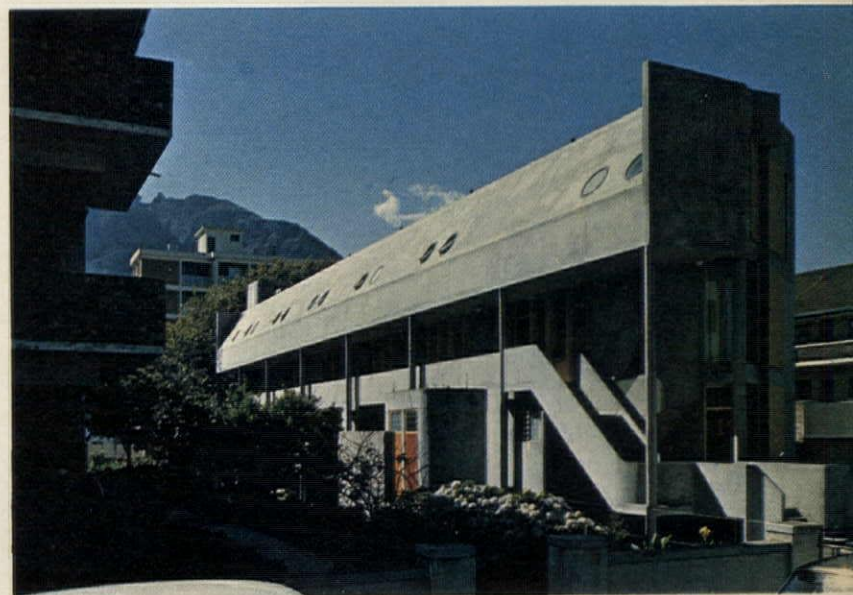
Scott Road apartments (1971) in Claremont, Cape Town. North loggia screen (above) is system of gardens, terraces, and balconies (below).



## Iona apartments



Mid-level access gallery (above, below) at Iona apartments (1971) in Rondebosch, Cape Town, ties complex combination of units together.

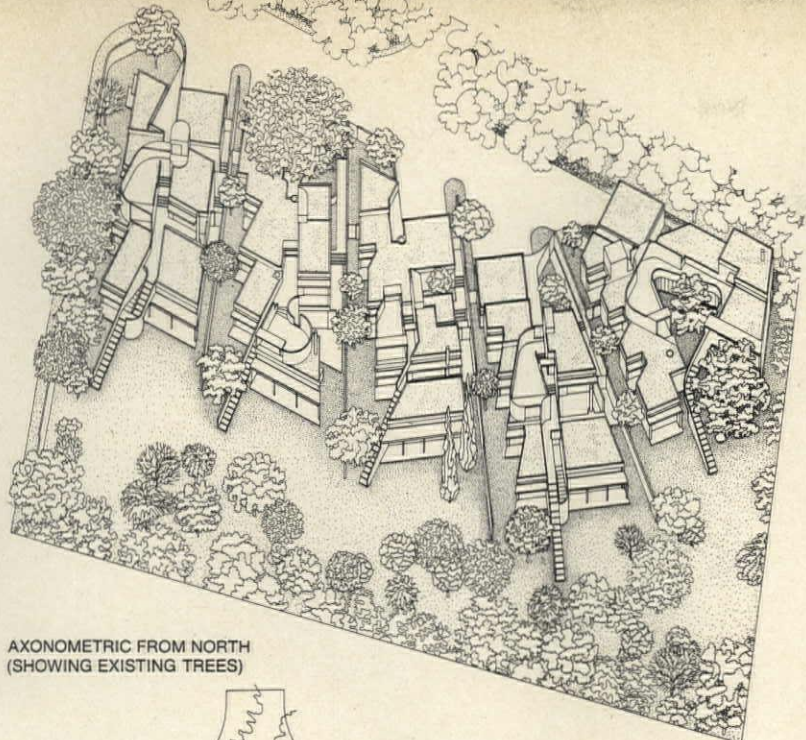


**Profile: Adele and Antonio Santos**

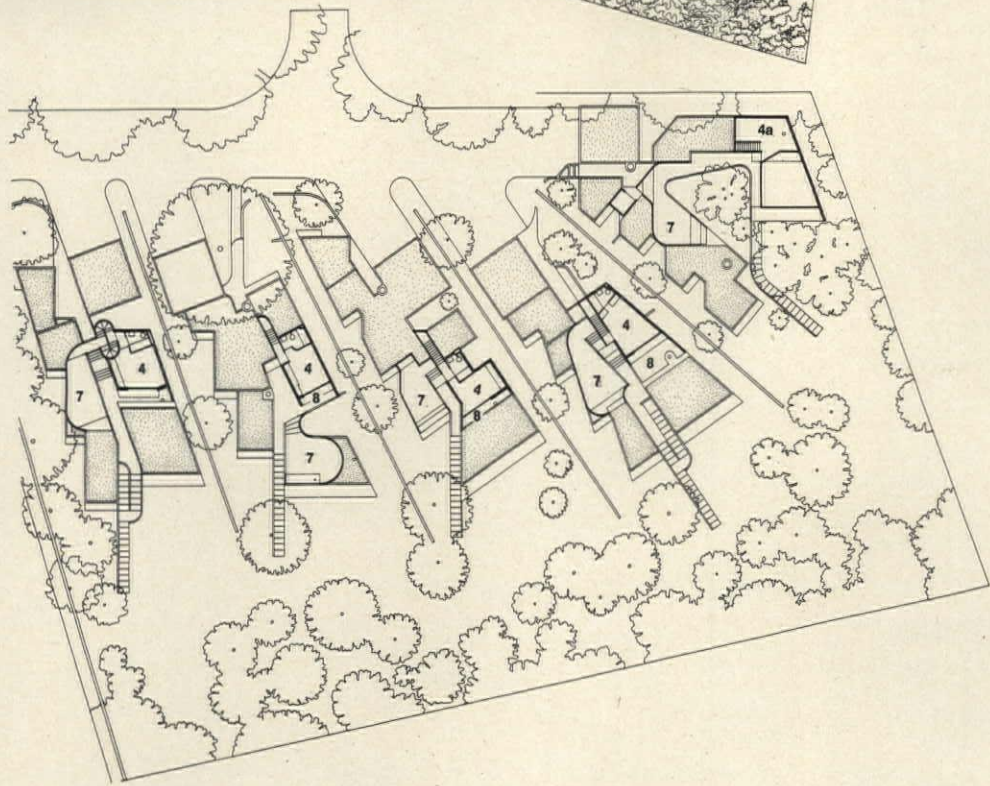
## Rowan Lane houses

Existing trees were a crucial determinant in siting the five houses at Rowan Lane (1973) in Kenilworth, Cape Town. Stair to Unit C's roof terrace (below) separates ground-level living and sleeping areas, and the same pattern of division between public and private areas is repeated at Unit E (bottom). In double-height living room of Unit A (right), stairs lead to upper-level study that looks over roof terrace.

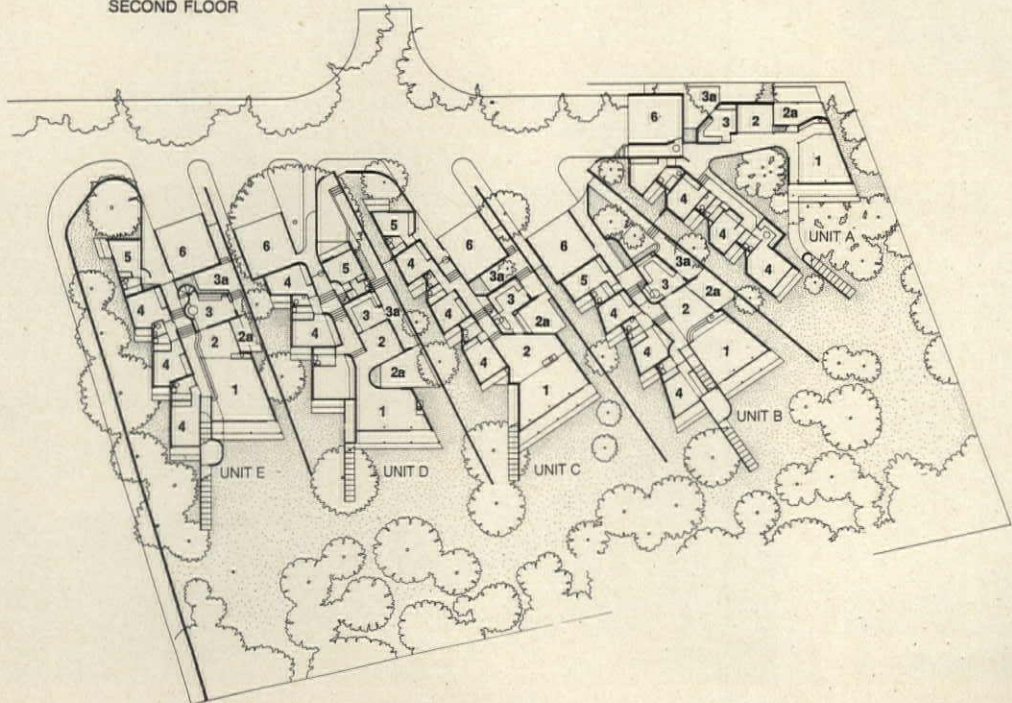




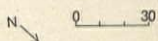
AXONOMETRIC FROM NORTH  
(SHOWING EXISTING TREES)



SECOND FLOOR

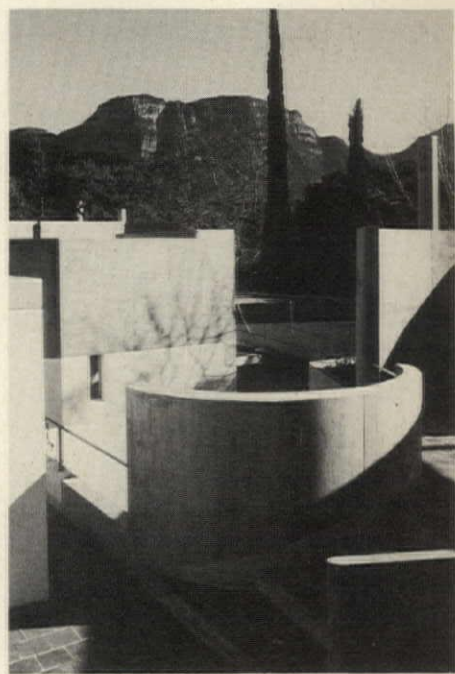


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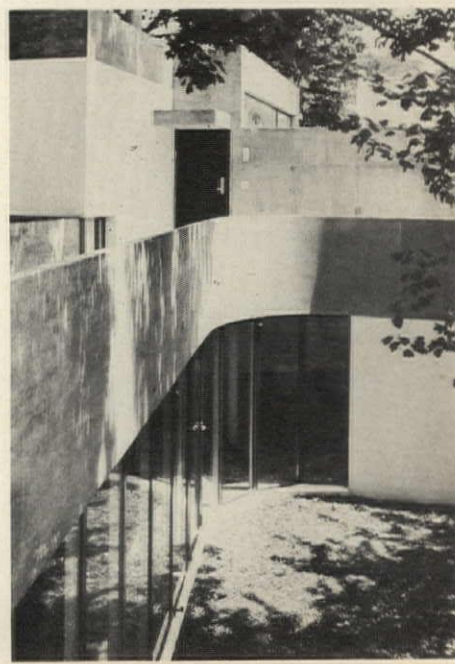


**Legend**

- 1 Living
- 2 Dining
- 2a Dining patio
- 3 Kitchen
- 3a Kitchen yard
- 4 Bedroom
- 4a Study
- 5 Independent suite
- 6 Double garage
- 7 Solarium
- 8 Terrace

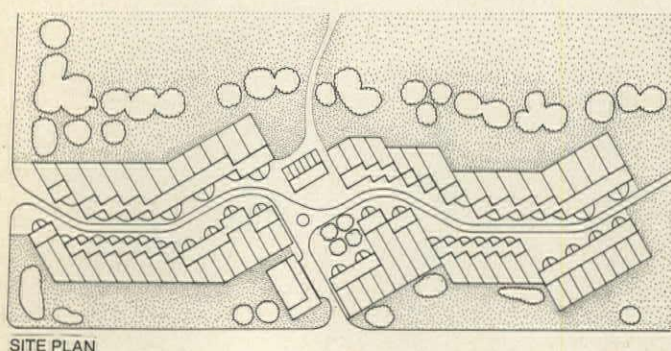
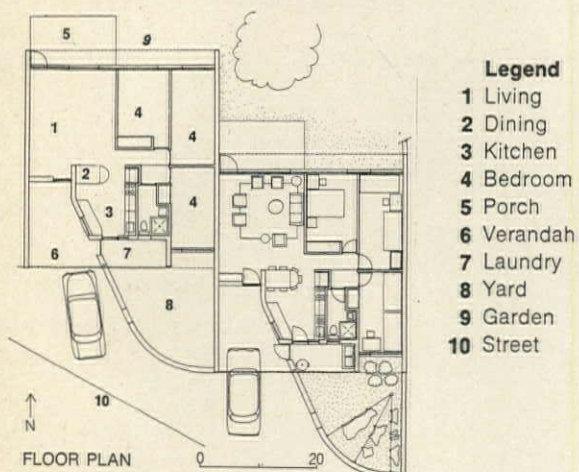


Roof terrace solarium of Unit D (above), and  
corner of Unit A's private courtyard (below).

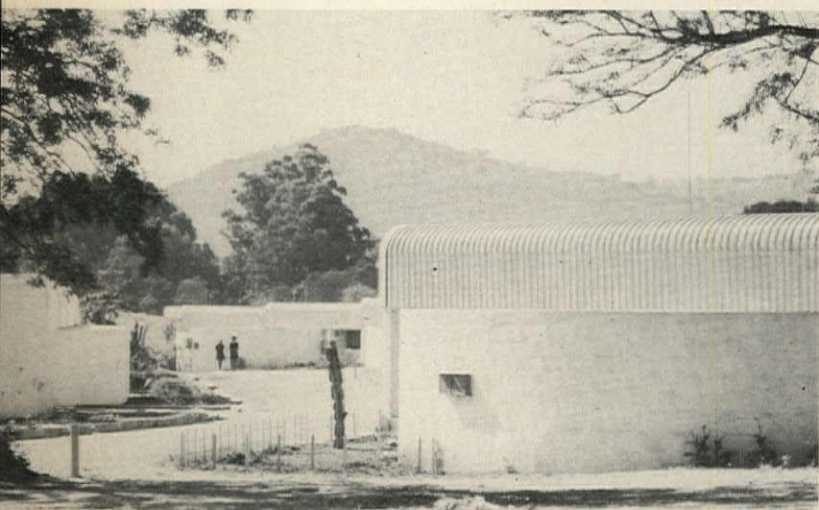


Profile: Adele and Antonio Santos

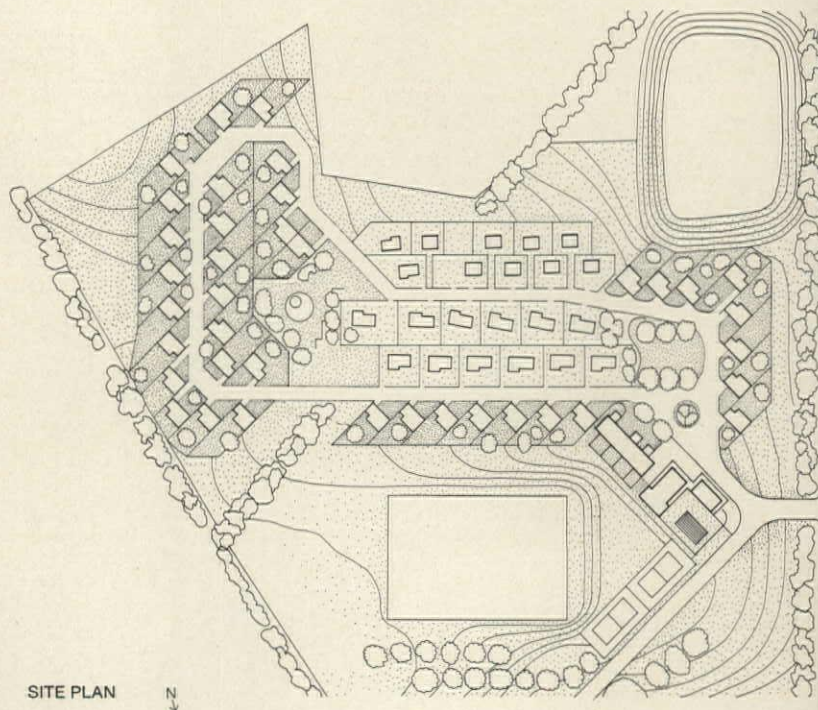
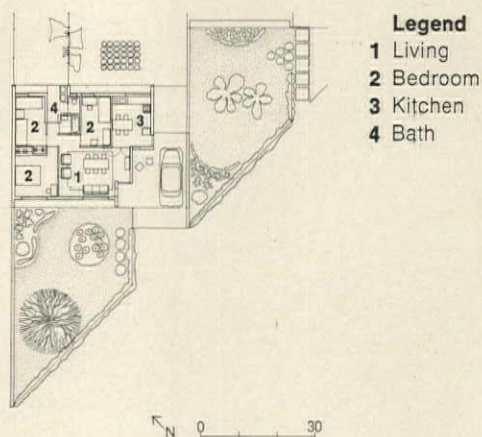
## Matsapa housing



At the Staff Housing for the National High School (1974) in Matsapa, Swaziland, system of diagonal lot placement maintains individual unit identity (above); connecting of units serves to define street (below).

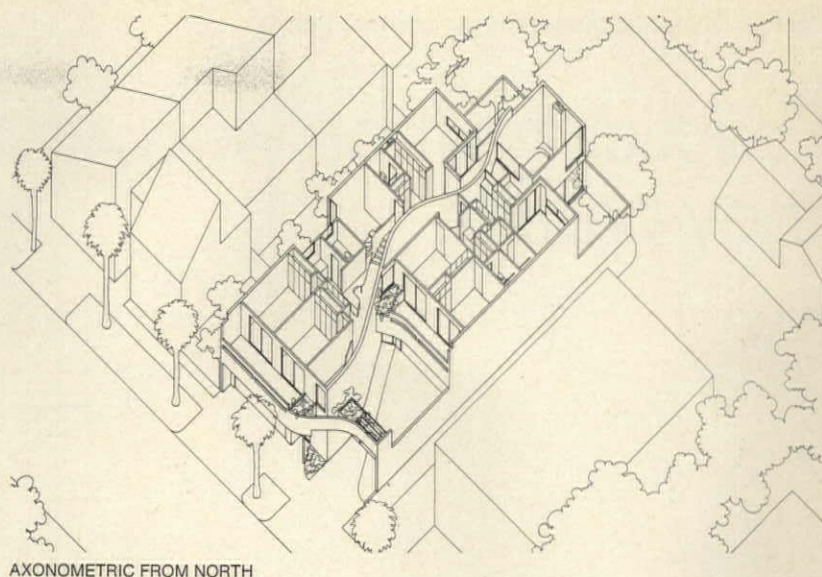
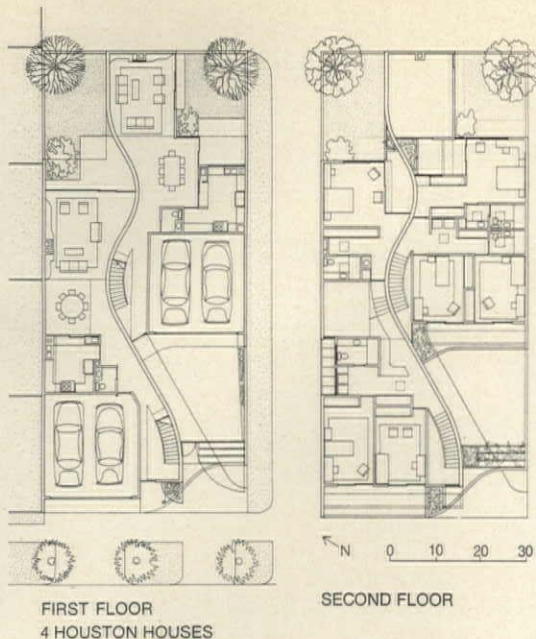


## Kromvlei housing



Lateral garden walls at the Kromvlei Workers' Village (1972) in Elgin, Cape (below), enhance continuity of street façade and allow separation of front and rear exterior areas, which are observable from kitchen.





nipulated with an authority which, when perceived in terms of the larger body of work, constitute elements of their personal style. For example, the Stekhoven House (p. 63) has a winter terrace on the north side (north being the principal sun direction below the equator), which is covered by an access gallery on the second floor. This access gallery is cut back, however, so that the sun will penetrate the terrace in winter months. The same detail occurs at the Shear House (p. 64), again for a terrace. While the Shear House is organized to shield open outdoor areas from strong southeast winds, the terrace, adjacent to the living room, is both shielded by the overall configuration and similarly covered by a canopy identically cut back to admit sunlight. The two houses—one linear, the other centralized—both contain a detail handling of an identical condition that underscores the rigorous adherence to fundamental principles running through the Santosos' work.

### Vox populi

If the basis for the general strategy in design lies with the anonymous "user," then what role is played by formal aesthetics, and how are these aesthetic decisions to be reconciled with the context in which they operate? The Santosos are conscious of this dilemma, for their concern with the way the user "reads" the environment inevitably raises issues of formal language and its symbolism.

The architect is faced with the problem of being the product of a "learned" tradition from whose values the users are relatively alienated. In this regard, the work of the Santosos is critical of the Modern Movement. Although they recognize in that tradition forces still with us, their interest in Modernism is not a narrow or academic interpretation, nor are they interested in dabbling in historicism. They see the key to the professional dilemma in the esoteric aesthetic of Modernism and in the alienating characteristic of its abstraction, which produces an exclusiveness that prevents the development of a vernacular. In their work, the Santosos have sought to reintegrate

evocative references, to suggest associations, to leave open "completion of the picture" by addition of sentimental set pieces by the user, without resorting to trivial, kitsch, or perverse exploitation.

Operationally, this attitude constitutes a conscious countermeasure to the esoteric aspects of the Modern tradition. The envelope containing activities, both internal and external, is not conceived of as an object, but frequently results from a process of assemblage, with different images for activity areas. The Santosos are frankly willing to push and ride romantic associations as far as possible in order to soften the aesthetic decisions whose roots remain in the Modern tradition. The most apparent overtones in the projects appear to recall the work of Le Corbusier and Alvar Aalto, never used "correctly" but rather in a synthesis with practical problems.

The loggia for the apartment building on Scott Road (p. 65) recollects many Corbusier *brises-soleil* while it articulates and qualifies light and view, controls sun and wind, creates a layer of visual privacy, yields a protected outdoor space as an extension of the units, and generally places the four three-bedroom duplex units in an active relationship with the environment as a whole. Furthermore, the loggia presents an evocative image, since it contains a profusion of planting, providing an appealing nonarchitectural reference in contrast to the overall clarity of the scheme.

The Iona apartment (p. 65), a complex mix of unit types within a single linear organization, serviced by a single access gallery at the middle floor, was earmarked for a student rental market. Its inflected interior walls were the result of angled parking below due to site constraints, the direction of view and optimum orientation, and a feeling of spaciousness within each unit, since the total permissible width was 20 feet.

At the Matsapa (p. 68) and Kromvlei housing (p. 68), staggered and diagonal lot configurations were generated to maintain both a unified scale along the public street and individual identity of the units. The exterior spaces serve varying purposes, and they also extend interiors outwards and

permit control over public and private sides. One situation involved row houses (Matsapa) and the other detached ones (Kromvlei), but the basic house form is the same, modified to suit the context.

The five houses on Rowan Lane (p. 66) combine an Aalto-like fan-shaped site plan with building elements recalling those of Le Corbusier. More significant, however, are the variations between units, even though each aspect of the rooms maintains a consistency within this variety. Another factor in the development of the design was maintenance of existing trees.

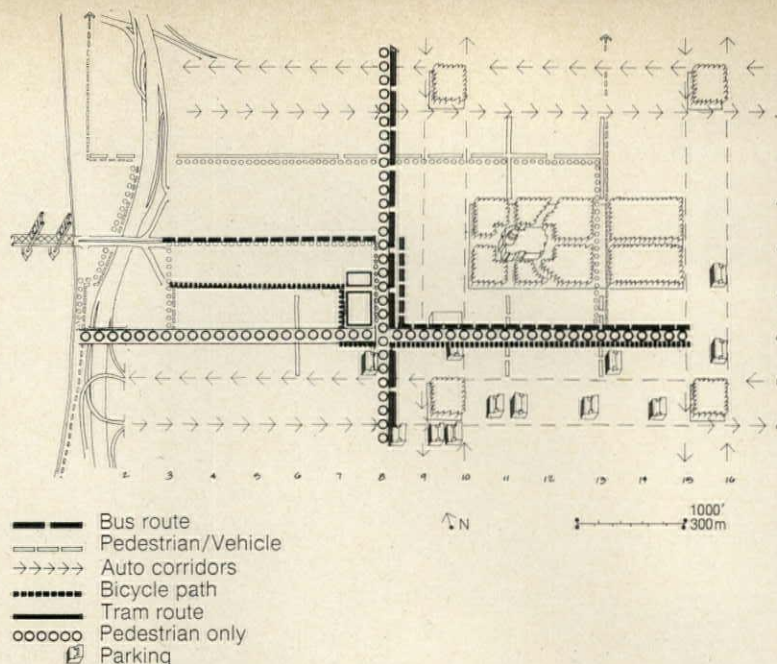
At both the Stekhoven (p. 63) and Shear House (p. 64) the principal constraints were the irregular sites; their principal generative forces were hard, closed sides on public approaches with an opening out to view and orientation on private sides.

### Houston footnote

A recent project for Houston, Tx (illus. 4) indicates that rigorous adherence to design objectives, articulated in a variety of scales, can lead the way out of a virtually impossible situation. Two town houses, each requiring two automobiles, were planned for a lot approximately 32' x 80'. The party wall became serpentine to generate positive and complementary negative design conditions to either side. The units are not identical, but rather mutually reinforcing. For each gesture in one unit, there is a corresponding trade-off in the other. An examination of the solution on this basis yields no compromises, but rather reconciliations of goals for each unit.

The result is a logical extension of the principles which informed the Santosos' earlier work. The architectural synthesis is a complex conjugation of a language generated from basic environmental needs, with the authority of a working knowledge of the Modern tradition. What occurs is an accommodating assemblage, a partially and deliberately incomplete architectural statement inviting participation by the user in the design process, and promoting a personal bond with the environment that no complete, custom-made exclusive design could ever yield. [Peter Papademetriou]

# Practicing what they preach



1977 Capitol Area Plan by SOM showing movement

**Energy-conscious state officials sponsor a competition different from most others: energy efficiency is given top priority in the program for an office building for the capital of our most populous state.**

The most significant event to date in the new energy conservation design field has been the 1977 competition co-sponsored by California's State Architect, Sym Van der Ryn, and the California State Energy Commission, for a new state office building in Sacramento. The seven-month competition for the \$15 million project drew 41 first phase entries, which were reduced by jury review to six finalists. The rigorous second phase required not only an architectural presentation, but also the design of the electrical and mechanical systems with an evaluation of their performance as it related to the proposed energy strategies.

## An integrated program

Significantly, team members of four out of the six finalists were either on the faculty or recent graduates of the College of Environmental Design, University of California at Berkeley. Actually, this is the third low-energy building designed for the state during Van der Ryn's tenure in office. The first was also located in the Capitol area, the second well out of the urban core. Both were done in the state office and furnished background material for the competition's energy testing specifications.

Of the competition's several laudable aspects, one of the most praised by participants and observers was the program itself. Rather than concentrating on energy conservation alone, Van der Ryn and his staff wrote guidelines for a total enhancement of urban life through the integration of technology with architecture and urban design. Stated goals were to provide "an opportunity for designers to create new forms and better environments through innovative design based on energy conservation, climate responsiveness, and the appropriate use of renewable sources of energy," and "to demonstrate that today's successful buildings can only evolve when human

needs, energy, environment, and economic concerns are integrated in a simultaneous, rather than a sequential, fashion." That one of the country's mightiest state governmental bureaucracies is providing such an opportunity is as startling as it is commendable. What prompted this act?

## Divide and squander

To begin with, there was the policy of former Governor Ronald Reagan, who preferred leasing space for office expansion, rather than building it. Thus 1.19 million sq ft of government-leased office space was fragmented into 55 scattered pieces. Resulting management expense gave the renewed state office building program a high priority with present Governor Jerry Brown. Van der Ryn was hired away from U.C. Berkeley to cope with the situation. His methods have been increasingly directed to broadening the context of the problem. To understand that context, some knowledge of Sacramento's past is needed.

Like so many other U.S. cities, Sacramento lost its heart to urban renewal in the 1960s. Thereafter, the accumulated, small-scale urban patchwork was traded in for super-block office buildings which have turned the capital city into a provincial version of Washington, DC. With the governor's backing, Van der Ryn is trying to recapture some of Sacramento's former Central Valley town character.

## Relaxed urban village

The guide for this attempt is the 1977 Capitol Area Plan drawn up by John Kriken of Skidmore, Owings & Merrill of San Francisco. The plan reduces the scale of development to quarter-block units of 160' x 160', with a 50-ft height limit. In this way, governmental, commercial, cultural, and residential construction can take place incrementally, on a modest scale. The plan's guidelines for building types and street landscape were put together with the state's energy conservation standards to form the context of the competition.

Specifically, the program called for offices of 10,000 to 15,000 sq ft totaling

240,000 sq ft of walk-up space. "Crystal clear circulation" and easily identifiable entrances were stressed. In addition, the site program entailed 40 to 50 housing units to be built later by a private developer. The hoped-for result was a mixed-use block, embedded in the existing transit and pedestrian circulation systems. The encouragement of car pools and use of public transit would, presumably, enhance the idea of "active streets" and well-used open spaces. In Kriken's words, "This would be the beginning of a kind of urban village developed in a relaxed architectural style either reminiscent of still existing, pre-energy-dependent buildings in the area or buildings uniquely expressive of their energy conservation techniques."

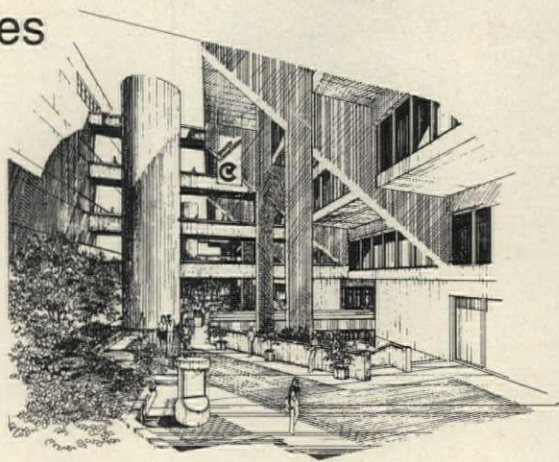
## Energy brain trust

Although submitted schemes involved both energy-intensive technology and passive systems susceptible to user control, the first place winner was the only finalist that relied on high technology. Disagreement within the energy design field itself over the relative effectiveness of active and passive systems at the present time was reflected in a split jury vote. Van der Ryn and engineer Fred Dubin chose the second place scheme of the Berkeley-based ELS Design Group, while state officials Leonard W. Grimes, Jr. and Alan D. Pasternak joined architect William Caudill of Caudill, Rowlett, Scott, in selecting the first place scheme of Benham-Blair & Associates, a large architectural-engineering firm with headquarters in Oklahoma City.

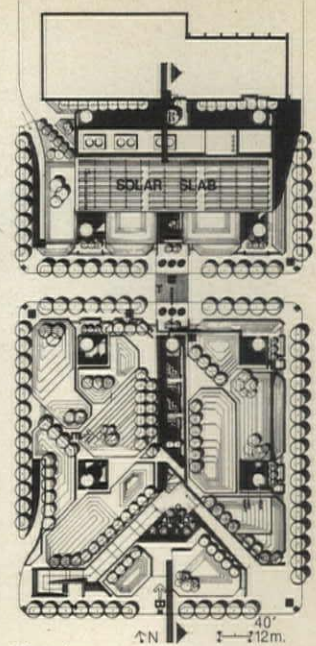
Whether or not the winning scheme is built as designed will depend on cost considerations which now must be taken more seriously than they were in the competition situation. What seems most important now is the effects of the competition itself. First, the state is in possession of a valuable fund of energy-conserving design methods which it will use in a continuing building program. Second, a highly energized center for further research in the field has emerged in and around the College of Environmental Design at U.C. Berkeley. [Sally Woodbridge]

California competition: First place

## Benham-Blair & Associates



View of concourse

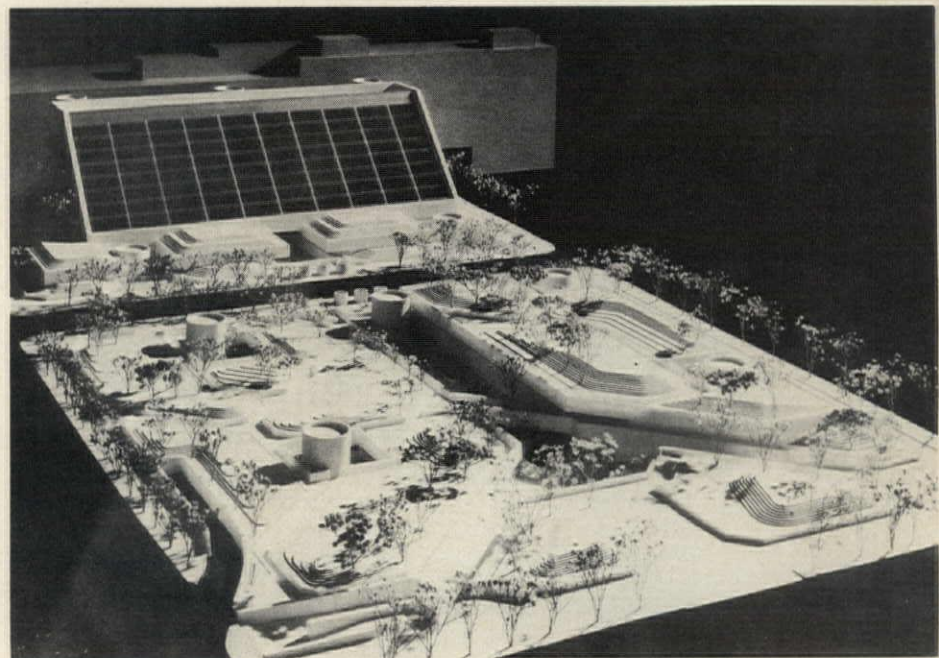


Site plan

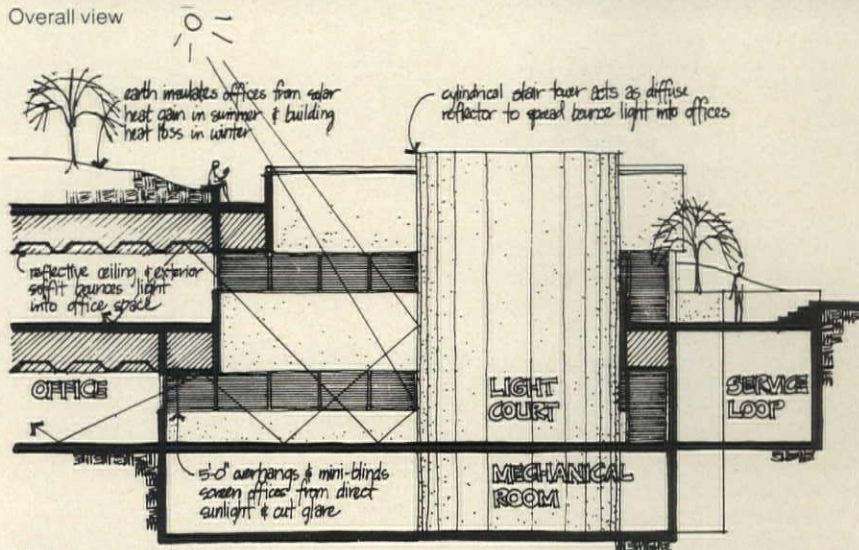
**The prize-winning project makes use of a greatly reduced energy requirement as part of its conservation scheme.**

The winning scheme "speaks solar." With the office space put underground and landscaped, the dominant visual element is the monumental "solar slab" at the north edge of the site. Circular stairwells and bridges connect it to the existing office building on the other side. The open, parklike area is bisected by a below-grade commons and pedestrian mall, entered by ramps at the open corners of the site. An indoor/outdoor cafeteria and a 200-seat auditorium are also on this level. Office modules face the mall and receive natural illumination from light courts surfaced with reflective materials. Each light court also has a circular stairwell for access.

The Benham-Blair scheme projects a reduced energy requirement for the 237,000-sq-ft building to less than half the standard prescribed for federal office buildings, or 19,880 Btus per sq ft per year. The means are a combination of underground structure and energy strategies such as solar concentrators, an absorption machine, screw compressors, and ice-making equipment. Artificial lighting is monitored by a photo-electric control system. The solar slab, which slopes southward at a 45 degree angle, contains 12,000 sq ft of focusing solar concentrators which track the sun as it moves across the sky. The structure also acts as a shield for the above ground portions of the building during the summer, when an economizer cycle also uses cool night air to flush accumulated heat from the building.



Overall view



Section through light court



Section through project

California competition: Second place

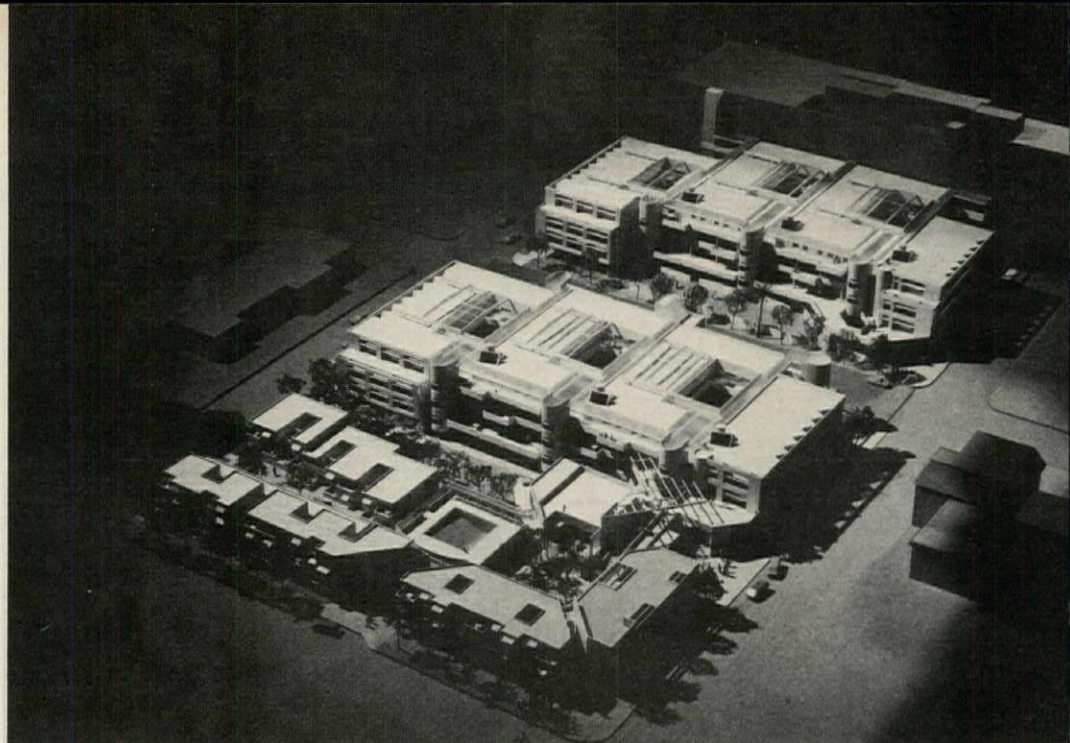
## Baker/Banta/Cutri and ELS Design Group

**Passive methods of conserving energy distinguish the runner-up, which uses architectural, not technological, means.**

The second place scheme emphasizes innovative use of inexpensive and reliable systems combined with commonsense strategies for passive energy conservation. By siting the scheme's components—auditorium, library, main office entrances, shops, cafés, and housing—along pedestrian and transit streets, the designers hoped to effect a reasonable mixed-use activity. A network of pathways and shared public spaces breaks up the scale of the project and ties the site to the city. One important axis visually links two 19th-Century landmark houses while providing a path through a neighborhood square to connect bus stops. During the hot and dry Sacramento summers, the open spaces would provide cool, green buffers between the buildings.

Six modular building units with courtyards form the heart of the design. Their retractable skylights bring daylight to the buildings' cores, serve as seasonal pre-cooling and pre-heating chambers for supply air, act as buffers to outside temperatures, and provide landscaped social centers for each department. South-facing outdoor walkways and stair towers direct the buildings' circulation while acting as sunshades; double glazing, high insulation and saw-toothed windows on the east and west façades minimize solar heat gains.

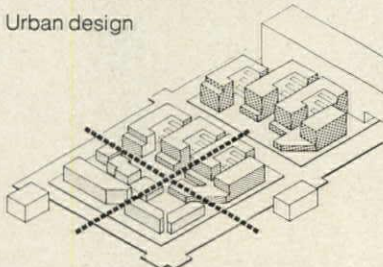
Although each courtyard module is equipped with simple, dry-air evaporative coolers and variable volume induction units, passive operations reduce their loads. The building mass itself operates to soak up daytime interior heat from lights and people which is flushed out by an off-peak, night ventilation mode. A low-watt, highly flexible task/ambient lighting system radically reduces the major energy expense of the building. The team's computer analysis of all systems indicates that the annual energy use level can be reduced to 1/5 that of the equivalent standard office building without any sacrifice in comfort.



Overall view of ELS scheme.

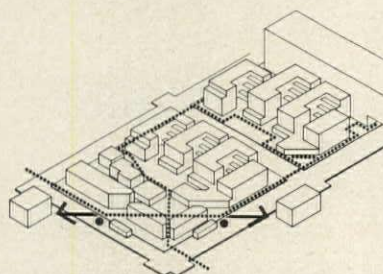


Terraced courtyard with retractable skylight.

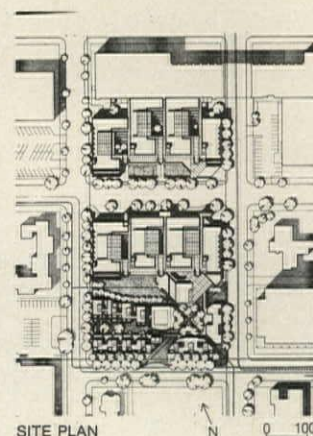


Urban design

Victorian axis joins two landmarks through open space network.



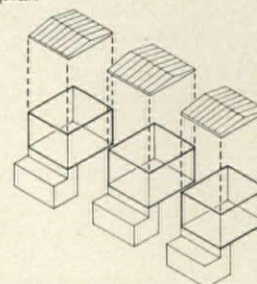
Quarter block phasing permits options in project development.



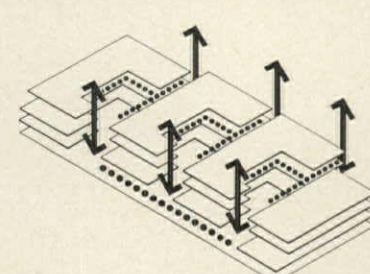
SITE PLAN

Site plan

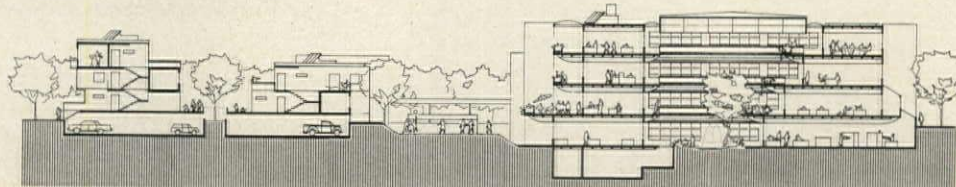
Energy systems



Individual courtyards integrate building mass and elementary mechanical systems.



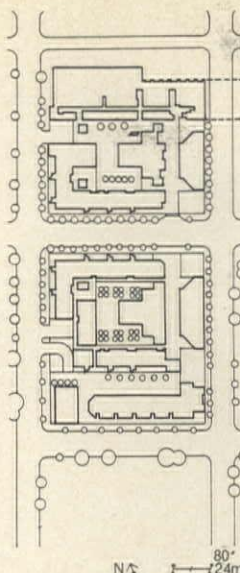
North-south orientation minimizes solar heat gain.



Section

## California competition: Third place

# Davis, Teeters, Ambrosino, Lum, Hoshi, Bryan and Bazjanac



Site plan

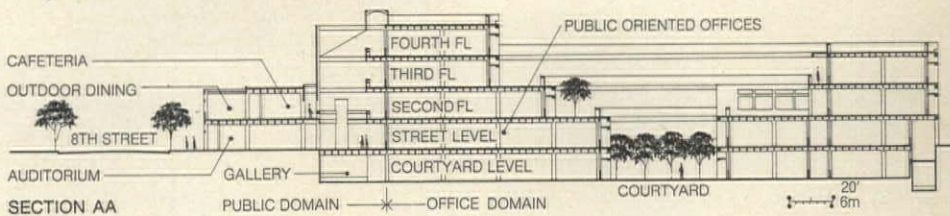


## Currently available technology combines with architectural design in this plan which placed third in the competition.

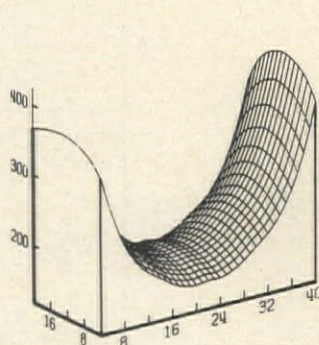
The third place scheme also combines inexpensive, currently available energy technology with architectural design to reduce the energy demands of the building. The means are natural lighting for all work spaces, increased thermal storage capacity, effective solar shading, natural ventilation, and the optimal use of mechanical systems.

Architecture responds to urban design and user requirements as well as energy conservation needs. A spacious gallery paralleling the well-used pedestrian and bus route on 8 St. is shaded from direct sunlight by a form which reflects light into the interior. Public office access as well as shared public facilities are on this side of the building. Along 7 and N Sts., considered major transportation corridors, the complex has a nonpublic façade, richly articulated with sun shades. South and west façades receive different shading treatments. Except as it occurs in the housing or on corners of the office complex site, open space is concentrated in two large, multi-tiered courts which provide natural lighting for the work space, access to offices with light public use, and a private social domain for the workers.

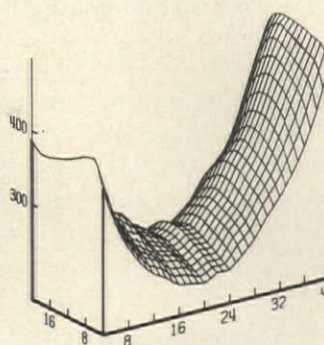
The 48' x 48' modules compose the building's function as independent organizational units for 12 to 25 people. They can be combined vertically or horizontally if larger office areas are needed. These units, naturally lit by windows at either end, may control their own environment independent of the rest of the building. The only nonarchitectural, newly developed energy technology used in the scheme is a rock bed at the base of the building. Air blown through ducts above and below the rock bed is directed into thermally conditioned spaces to supplement heating or cooling by mechanical means. Supply and exhaust ducts connecting the rock bed system below with the fan units on the roof are expressed on the elevation.



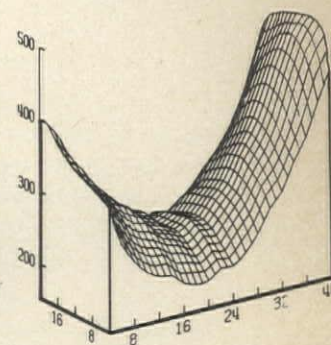
SECTION AA



Raw footcandles

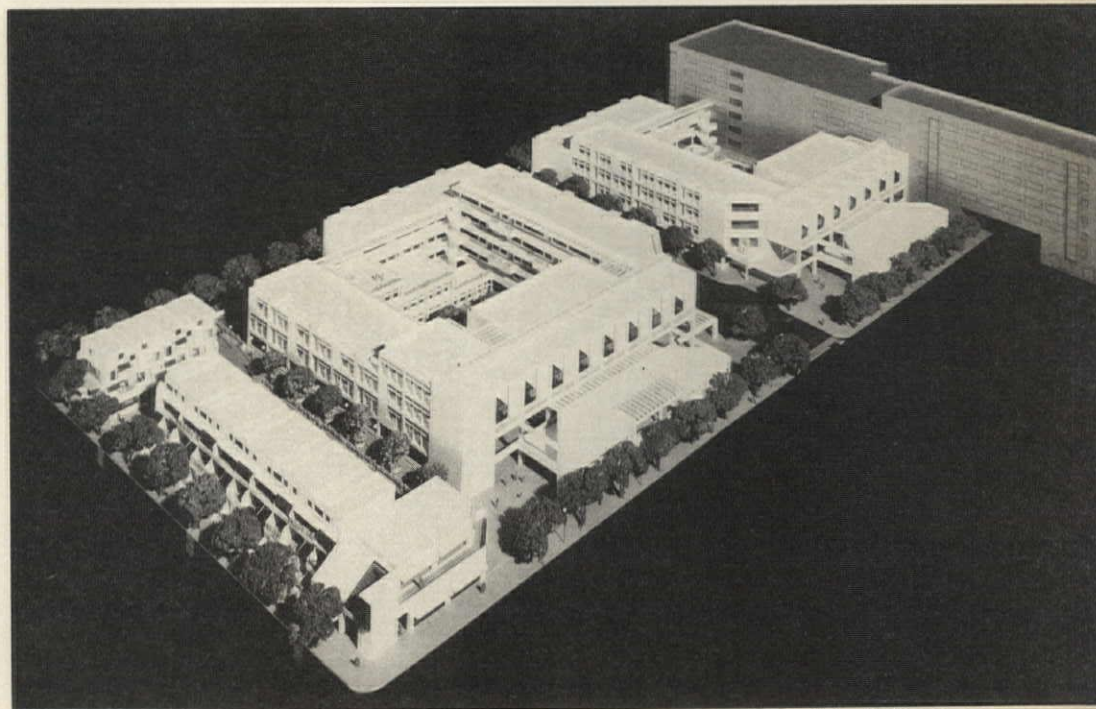


Equivalent sphere illumination (east)



Equivalent sphere illumination (west)

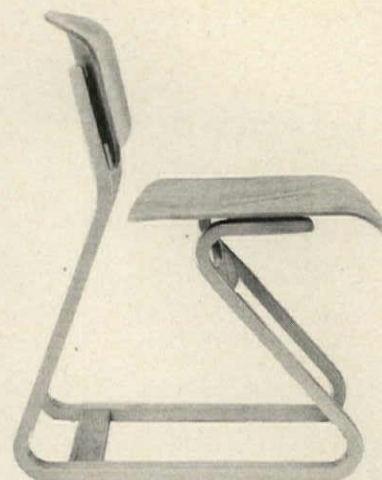
Computer simulation of the distribution of natural and artificial lighting with artificial lighting at 50% output. Diagrams represent half of the typical work module.



Gallery creates public edge along 8th St.

Photos: Rob Super

## Bending with the times



The newest from the oldest: Thonet's Pyramid chair, designed by Charles Pollock, most recent of the new molded plywood chair introductions.

**Resurgence of interest in molded plywood furniture marks one of the big comebacks in interior design. Here, a look at the reasons behind this new trend, with a history, a survey of manufacturing techniques, and a selection of recently introduced offerings which respond to the growing demand for bent ply.**

It is almost 150 years since Michael Thonet perfected his molded plywood manufacturing process, revolutionizing the making of furniture forever after. But the degree to which furniture and interior designers today are seizing upon this wood product (also known as bent ply, plywood laminate or ply-bent) it could easily be called the furniture material *par excellence* of the late 1970s, if not one of the greatest comebacks since Lazarus. For years molded plywood as a furniture material had been neglected, unappreciated, and considered downright unfashionable.

By the early 1960s no self-respecting interior designer would think of using it, and it seemed as dated and irrelevant a material as celluloid, bakelite, or isinglass. But architects never quite lost their affection for molded plywood furniture, nostalgic though that feeling might have been: for architects have a weakness for architect-designed furniture, and some of the greatest furniture ever designed by architects was made from bent ply. The increasing degree to which architects have been involved in interior design work recently is in no small measure reflected in the resurrection of molded plywood, and this renewed interest has spread not only to other interior design professionals, but to the marketplace as well. It is a clear case of the right material at the right time, and the specific properties that commend it to so many interior design applications are no less than four watchwords in interior design today: for above all, molded plywood is *cheap, natural, light, and versatile*.

As architects and designers—and certainly consumers—have become increasingly aware, perhaps the most compelling attraction of bent ply is its relatively modest cost. Spiraling prices in the hardwood industry in the past decade have priced many would-be buyers of solid wood furniture right out of the market. The inferior quality “wood product” furniture that has flooded the mass market recently is an attempt to bridge the gap between the pub-

lic's demand for wood furniture (as high as ever) and the cost of that furniture (higher than ever). Molded plywood, literally a sandwich of cheaper—but stronger—woods between exterior veneers of more expensive—and more attractive—varieties, gives an appearance equivalent to fine solid hardwoods, but at a considerably lower cost. The basically similar practice of combining stronger base woods with finer veneers has been a practice endorsed by great furniture makers throughout history, and in the case of bentwood laminates, there is even greater strength and durability than in solid wood structures.

Aside from the allurements of the bottom line, people in increasing numbers want—and designers are giving them—natural materials in quantities not seen since the introduction of the so-called “miracle fibers” three decades ago. Originally a reaction against the infatuation with synthetic materials which characterized interior design in the late 1960s, the growing desire for natural materials is now paralleled by the growth of interest in natural foods, natural cosmetics, natural childbirth and natural everything else. Furniture made of chipboard faced with wood-grain composition just won't do for those who grew up on *The Whole Earth Catalog*, and molded plywood is the perfect answer, combining, as it does, natural beauty and organic distinctiveness at a realistic price.

Molded plywood's third commendable property, lightness, can be understood in both senses of the word. In terms of color, much of the newest molded plywood furniture is faced in the light oak that has emerged as another of the major interior design enthusiasms of the past few years. The high blonde colors that a decade ago were deemed irretrievably and unstylishly reminiscent of the 1950s are now once again appreciated for the way in which they harmonize with the warmer, lighter, more natural interior design schemes favored today. Molded plywood is light in weight, too. This is in large measure a result of its great strength, for not unlike a suspension cable made of hundreds of smaller cables surpassing in strength a monolithic cable of the same diameter, so molded plywood has the combined strength of its many component layers. Thus bent ply is able to perform its support functions with considerably less bulk—and hence less weight—than its comparable solid hardwood counterparts. Also possible



Classics designed by the "big three": From left to right, Michael Thonet's Biedermeier chair, circa 1830, believed to be his first in bent ply; detail of leg showing laminate sandwich; Alvar Aalto's Paimio chair, 1929–33; Charles Eames's "potato chip" chair, 1946; Eames lounge and ottoman, 1956.

with molded plywood are a whole variety of structural configurations closed to solid wood furniture, allowing the fluid shapes and sinuous lines favored by many contemporary designers. Molded plywood's versatility is no more than an amalgam of all its other qualities, and is likewise the prime reason why it is enjoying a newfound and well-deserved popularity.

### Tales of the Vienna woods

The process of bending thin wood members with heat and applied pressure has been known for several hundred years, but it remained for an obscure Rhenish furniture maker named Michael Thonet to perfect that process into an industrial technique. He received a patent from the city of Vienna for his molded plywood process in 1842, and in time he became to the chair what Henry Ford was later to become to the automobile. In the unconscious manner of other revolutionizers of materials and technics in the 19th Century, Thonet at first did not try to exploit his innovation visually, but rather contrived to make his earliest molded plywood furniture look as much as possible like conventional carved and joined furniture. He sheathed his first molded plywood chairs almost entirely in veneers so that the laminate sandwich did not show: only the insides of the legs were deemed invisible enough to escape this needless concealment.

Although Thonet went on to even greater fame for his bentwood furniture (his immortal Vienna café chair is without question the best-selling chair of all time), he evolved his bentwood technique from his earlier molded plywood method. Michael Thonet's impact on modern furniture design can scarcely be overstated. By the time of the Crystal Palace exhibition in 1851, he was already a famous man. His strong, simple, molded plywood and bentwood designs virtually jump out from the pages of the exhibition catalog, all the more so for the indescribably ugly and overwrought furniture and bric-a-brac with which they are surrounded. During the 1850s his techniques became standardized means of production, and around the world, the Thonet motto "*Biegen oder brechen*"—"Bend or break"—became a basic article of faith in furniture design.

Above all, Michael Thonet enabled good furniture design to become universally accessible for the first time in his-

tory, and this at a time when much consideration was being redundantly given to that issue among high-style designers throughout Europe. As Herwin Schaefer has observed in his essential *Nineteenth Century Modern: The Functional Tradition in Victorian Design* (Praeger, 1970), "Thonet's merit was to have designed and manufactured a mass product of undoubted aesthetic worth, a truly social product. While William Morris was expostulating about art for all the people but producing expensive pieces for wealthy patrons, the Thonet firm achieved the union of pioneering technology and a new aesthetic that resulted in an inexpensive, handsome product, truly available to the many."

Molded plywood continued to be used by other furniture designers during the remainder of the 19th Century, but none approached Michael Thonet's understanding of its properties and its potential. The great European furniture designers before World War I favored solid wood over bent ply, and after the war the efforts of such great furniture designers as Marcel Breuer, Le Corbusier, Mart Stam, and Ludwig Mies van der Rohe centered almost exclusively on metal construction. While the bent pipe furniture of Breuer, Stam and others incorporated curvilinear elements, those chairs and tables strike one today as part of the machine-like aesthetic promoted by the later Bauhaus. It was left to the Finnish architect Alvar Aalto to seek out new forms for furniture unconfined by the orthogonal rule, and it was Aalto who brought molded plywood into the 20th Century.

Aalto's interest in molded plywood as a furniture material (see P/A, April 1977, pp. 74–77) grew out of his fascination with its sculptural possibilities, and rarely in the history of any building or design material can there be seen such an obvious and successful affinity, such a thorough exploitation of design potential. The wide range of molded plywood furniture designs which Aalto and his wife produced over a 40-year period remain among the most beautiful examples of plywood laminate furniture (some would say any furniture) ever made. It is also among the most durable. At a recent Aalto symposium held by the New York chapter of the Society of Architectural Historians, several speakers, among the first purchasers of Aalto furniture imported into the US in the 1930s, reported that the tables and chairs are still going strong, all the more gratifying, they averred, because of the furniture's astonishingly low cost.

## Interior design: molded plywood

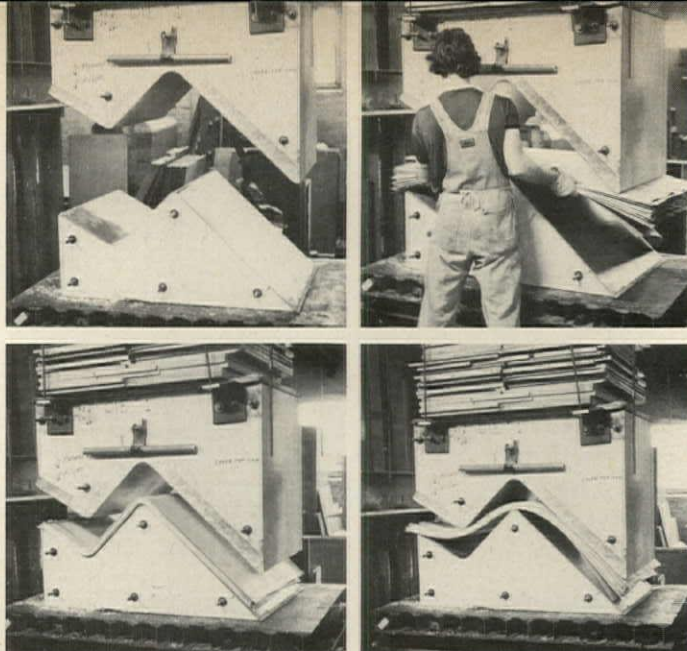
### The new Chip chair

By 1940, the year of the Museum of Modern Art's famous chair design competition, molded plywood had become a standard furniture material, and even Marcel Breuer, chiefly responsible for the bent pipe craze of the 1920s and 1930s, produced a bent ply *chaise longue* for Isokon in London. The winners of the MOMA competition, Eero Saarinen and Charles Eames, proved that the US did not lag behind in appreciation of the material, and the war years that were to follow shortly saw molded plywood used as never before for all kinds of heavy-duty furniture that could no longer be made of war-essential metals and synthetics. A refined version of Eames's MOMA chair was put into production immediately after the war in 1946 by Herman Miller, Inc., and set off another wave of enthusiasm for molded plywood.

Like all the great bent ply designs that preceded it, the Eames chair—affectionately nicknamed the potato chip chair after the shape of its distinctive seat and backrest—was light, cheap, and versatile. In a scant 30 years it has become a design classic, and it is even beginning to be collected by knowing connoisseurs: original versions of the Eames chair are now commanding hundreds of dollars each from New York dealers in 20th-Century "antiques." Eames was also responsible for a considerably more costly classic, his renowned lounge chair in molded ply and leather of 1956. Here he used a plywood laminate shell not for economy or strength—for this was a top-of-the-line chair to be sure, and durable plastics existed by then and were faddish, if strength were the only consideration—but rather for the sheer beauty of the material. That was something that money could buy, and the special place occupied by the Eames lounge chair among coveted status symbols since that time is ample proof of the beauty of molded ply being its own reward.

But there were lean years ahead for molded plywood. "In the 1960s you couldn't give Aalto furniture away," reminisces Pat Hoffman, vice president of International Contract Furnishings, Inc., herself the designer of a recently-introduced bent ply stacking chair. The Bauhaus reigned supreme in the first half of the decade, and who, she recalls, "wanted an Aalto stool next to their Wassily chair?" Then came the Pop explosion in mid-decade, bringing with it the idea of "fun" furniture: inflatable, collapsible, and, fortunately, disposable. It was against the background of those two diverse developments—the purist, formalist aesthetic of classic Modernism and the rock-'em, sock-'em, breakaway scene of 1960s iconoclasm—that the beginnings of change were first expressed.

Then came the rise of Italian furniture, interior and product design. Though most of that innovative design failed to make the lasting impact it seemed destined at that time to have, the real contribution of the Milanese school was the reintroduction of the curve into the vocabulary of high-style interior design. At first executed in the plastics and tortured molecular substances beloved in the 1960s, these designs and their progeny were later made in rich wood laminates, which their designers discovered to be the perfect material for the expression of the warmth and opulence they were



Four steps in molding bent ply at Thonet (clockwise from top left): empty mold; insertion of plywood sandwich; application of pressure; release.

after. Achieving the freedom and sensuousness of line only prohibitively priced hand-carved wood could otherwise provide, this fortuitous meeting of material and design remains a masterful combination at the hands of several Italian designers, most notably Tobia and Afra Scarpa. As designers now return to the wide variety of possibilities inherent in bent ply, a look at how those designs are executed reveals the great potential molded plywood opens to the imaginative mind and eye.

### Make it or break it

Sheets of wood veneer varying in thickness from about 1.5 to 2.5 mm are the basic units of molded plywood construction, the variety of wood generally depending on locale (in the US maple and oak are the standard, in Europe, beech and birch). In the first step of the bent ply manufacturing process, the wood "blankets" are individually coated with glue (Polyvinylacetate, or PVA, and urea formaldehyde are the most common fixatives) and are then stacked, still wet, in piles of generally odd-numbered quantities, to ensure a more solid adhesion. This veneer sandwich is then placed into a mold to bend it to the shape of a particular furniture part, whether seat, back, arm, or leg. Depending on the thickness of the sandwich and the molding process used, this step in the process can take from five to 20 minutes.

The molds themselves fall into two categories: wood molds, sheathed in a high-conductor metal, are used in the die electric process, in which high-frequency radio waves, supplied through broad copper conductors, produce the necessary "heat." When activated by such a current, today's glues (of a strength undreamed of by Michael Thonet) form a virtually indestructible bond, more likely to be sawn in half than pried apart. The second kind of matrix is the cast-aluminum mold, which uses high pressure rather than electricity. Because of a very great cost differential—aluminum molds cost many times more than wooden ones—aluminum molds are generally used for very high-volume manufacturing where an exacting control is required, while wooden molds are experimented with more casually, allowing for more creative freedom with the less costly components.

Some molded plywood elements require only one bending operation, but others take as many as four or five

bends. These multiple bends are usually performed in a more sophisticated, multi-operational press, guided by hand work which can add significantly to the price of a more complicated piece. Nor are all the bends and curves in molded plywood furniture invariably made by a molding process alone. Frequently, as is the case with much of the Aalto furniture, a combination of techniques will be used in a single piece of furniture. For example, a curving arm might not be all plywood laminate: the straight parts might be solid wood, with laminate strips inserted into the solid member to extend it and take the curve. Combinations of variously manufactured elements are not uncommon in molded ply furniture, and can represent a considerable saving when they add to ease of manufacture without sacrificing strength or attractiveness.

Once the molded sandwich is removed from the press, it can be cut down to the approximate size of the desired piece, then sanded prior to assembly into a finished frame or piece of furniture. If anything, molded plywood is too agreeable a material, and there have been cases where faultily designed and improperly tested pieces have not held up to the rigors of use. As an organic material, molded plywood is subject to individual peculiarities and structural impossibilities, and the exhaustive testing performed on their prototypes by major manufacturers is both a recognition of and a safeguard against that fact.

It does not seem likely that the world will have to wait long for another great designer to find in molded plywood the expressive, useful material so brilliantly exploited by Thonet, Aalto, and Eames—the great Father, Son, and Holy Ghost of the medium. For one thing, increasing consumer demand is bringing more and more furniture manufacturers around to the necessity of offering bent ply pieces. Not only in residential settings, but in commercial and institutional interiors, more and more molded plywood furniture is being seen. Perhaps a cue is being taken from educational institutions, where bent ply has enjoyed an uninterrupted popularity because of its warmth, its economy, and above all, its durability. That last factor particularly recommends it to such high abuse settings as correctional facilities, mental institutions, and children's rooms.

Molded plywood is, in fact, nothing less than the quintessential material of the late 1970s. It does not depend on endangered or vanishing resources. Though petroleum-based plastic furniture started going the way of its dinosaur-age base material around the time of the energy crisis a few years ago, molded plywood uses parts of the tree trunk suitable only for use as plywood. Bent ply is a perfect "low-tech" material, typifying today's cautious application of technology in decidedly non-technological ways, using its advances sparingly to manufacture products still in touch with non-technological references. Plywood laminate is economical, warm, realistic, inventive and natural: all qualities which have come to the fore again in the past few years as being once again worthy of the care of the interior design professions. The scares thrown into the architectural profession and the country at large in the past ten years have given a new twist to the old motto of molded plywood's father. For if Michael Thonet advised us to "bend or break," we can likewise see the real message as "bend, don't break." [Martin Filler]



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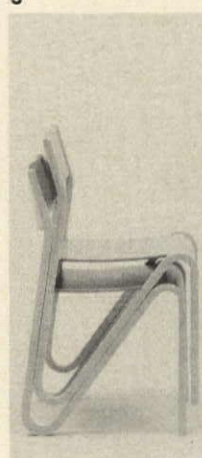
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11

A sampling of molded plywood furniture currently available. **1** Artona chair and dining table, designed by Afra and Tobia Scarpa for B&B America. **2** Scarpa side chair from Atelier International, Ltd. **3** Sven Ivar Dysse designed Laminette chair for Westnora. **4** The Pettitt ply chair by Don Pettitt for Thonet. **5** Pat Hoffman of International Contract Furnishings designed stackable Hoffman chair. **6** Also stackable is Westnora's Numero by Lindau + Lindekrantz. **7** Robert DeFuccio's Triangle chair, available from Stow/Davis. **8** Gunlocke's Profile 2497 is by designer William Sklaroff. **9** One of a number of versions of Skagen chair from R-Way Furniture Co. **10** Stendig's Nelson II chair is another Lindau + Lindekrantz design. **11** Many chairs use molded plywood for internal structure, for instance Steelcase's 421 Secretarial chair, shown here in construction.



Conferees work together in a round table conference at NSF

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# Skin deep

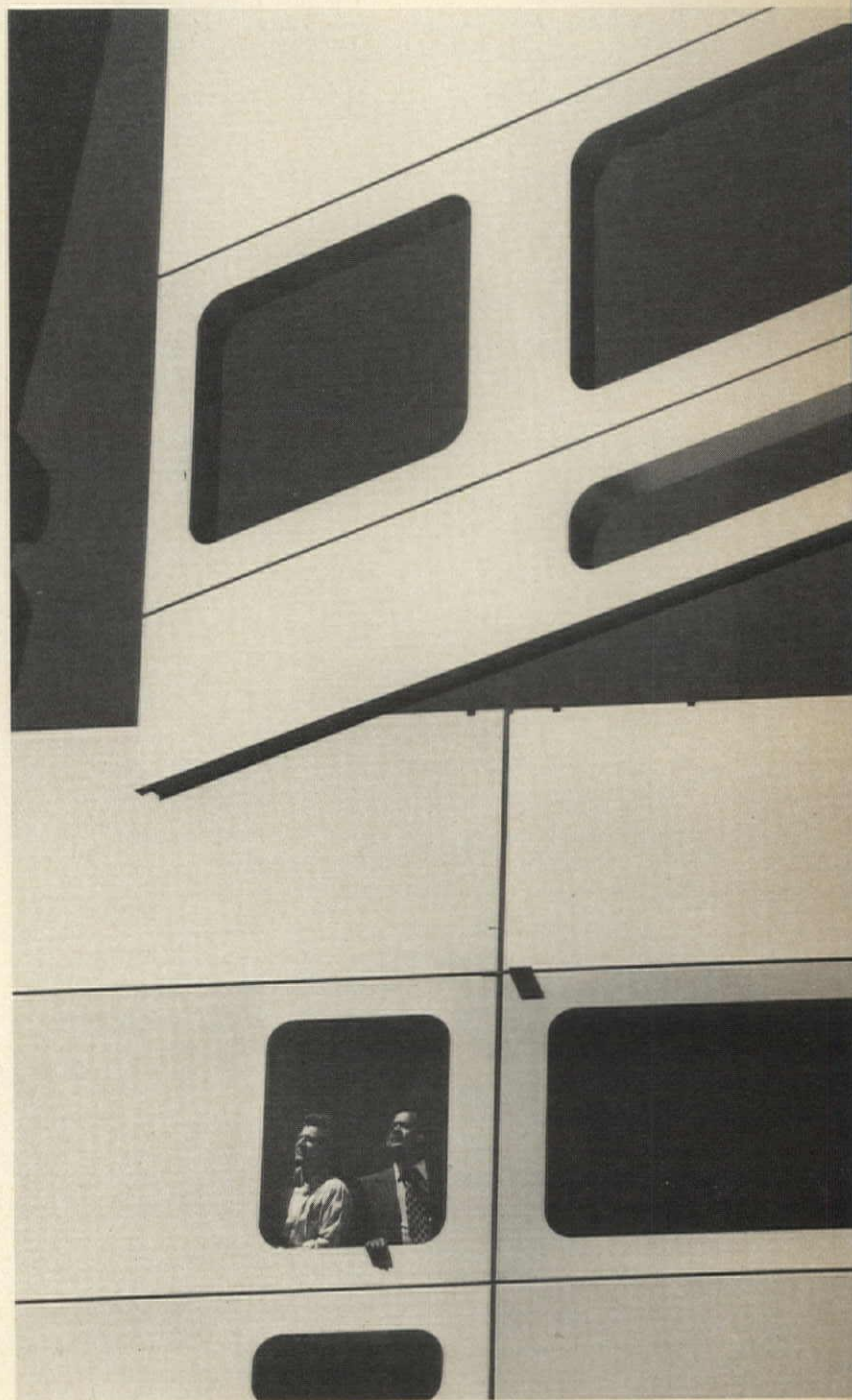
**A dream of the early Modern Movement, the modular wall panel fabricated of man-made materials has become an everyday reality, but its functional and visual potential is only beginning to be realized.**

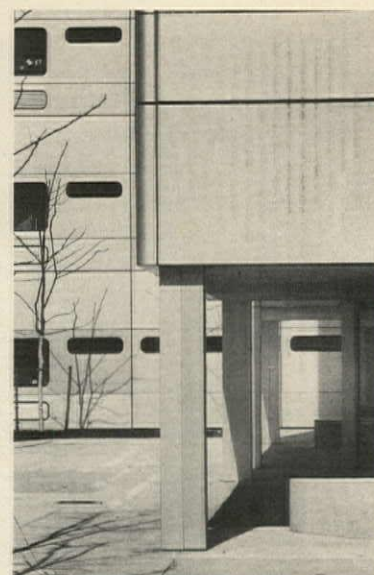
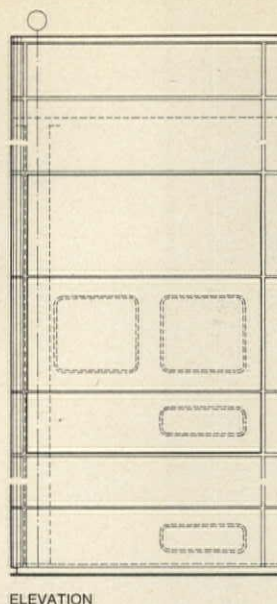
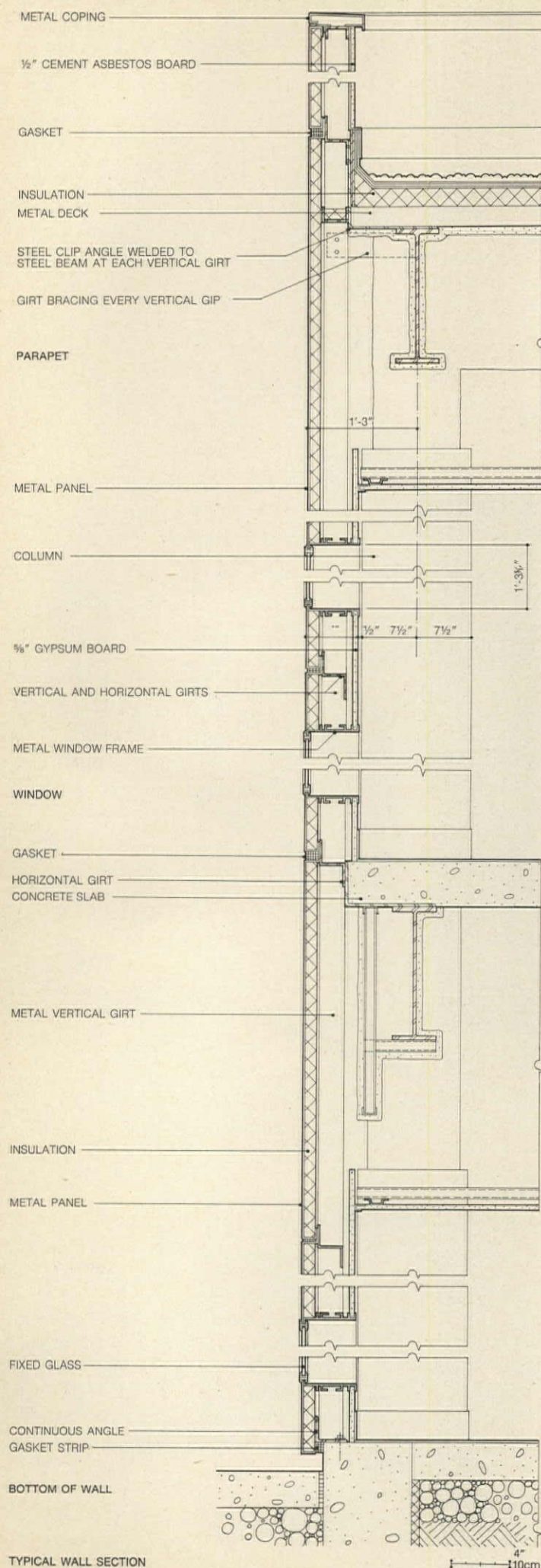
Beauty, it is said, may only be skin deep. With buildings as well as people, that may be true, but favorable first impressions still don't hurt. Exterior wall panel products all have one common goal—to present a handsome, durable façade. Some stop there, while many others go on to present options well beyond simple cladding. Gone are the days when wall panels had to be one of four or five materials with relatively fixed characteristics. Some familiar products are as effective as ever in certain applications, and P/A has discussed such major materials as glass and stone in previous articles. Some panels are more attractive than predecessor lines due to subsequent improvements or refinements. Still others are new additions, as yet not part of many architects' vocabularies.

One class of wall panel which is familiar, the precast concrete panel, is still a strong contender where weight is not an issue. Because concrete can be formed with numerous face textures and patterns, these panels offer a variety of design options. While precast sections can be load-bearing, most standard offerings are attached to an independent structural system. Solid concrete panels, if used, require backing by insulation to reduce heat loss in most applications. Precast panels are available, however, with either hollow cores or various thicknesses of insulating foam. One such panel, with 3 in. of polystyrene as a core, has a calculated "U" value of .075, as compared to .08 for the same manufacturer's 4-in. insulated metal sandwich panel. Prestressing allows the panels to withstand stresses due to shipping, erection, and service loads without cracking.

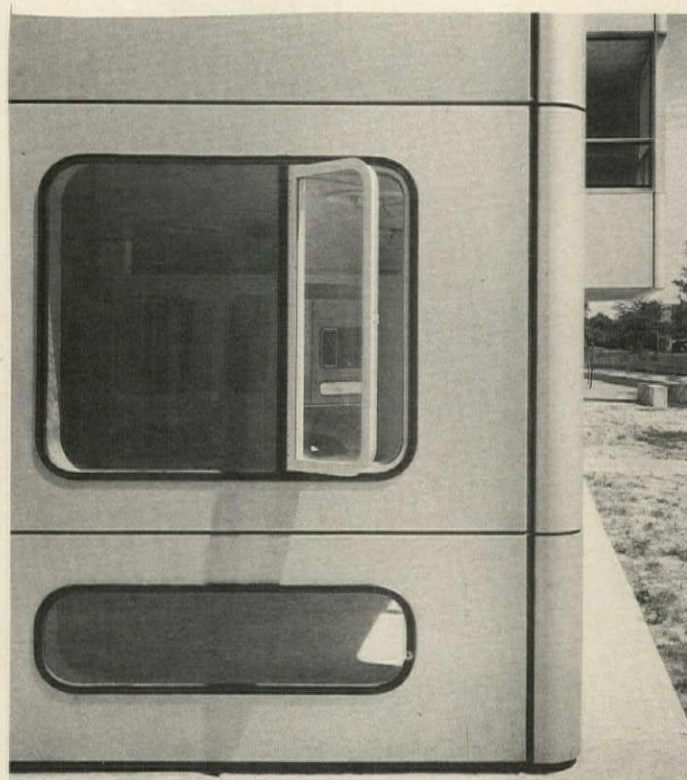
But concrete need not be dismissed entirely if weight is a problem. Several approaches are now available to combine the look of concrete with high strength at a fraction of

Prefabricated panel, 12' high by 11'-6" wide, being hoisted into place on Bronx Developmental Center by Richard Meier & Associates (P/A, July 1977, p. 43). Designed for factory installation of windows and louvers, panels had to be completed on site because of work rules.

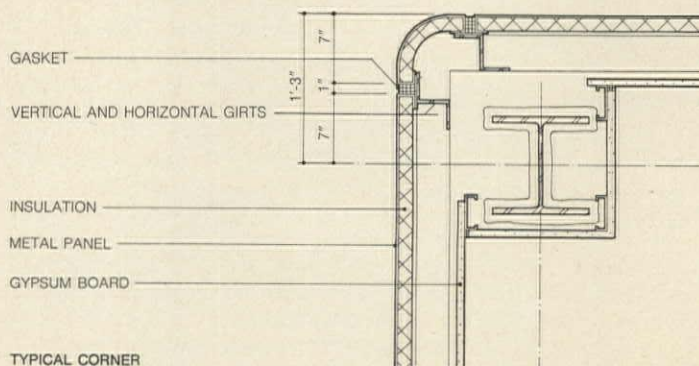




Photos this page: © Ezra Stoller



Each story-high section of Bronx Developmental Center wall (see previous page) is composed of three horizontal metal-panel panels, attached to girts at the factory, which are then fastened to the structural frame. Openings of standard sizes accept gasketed windows or, in the lower portion, louvers for unit ventilators. Dimension of standard curved corner indicates 7 1/2-in. thickness of panels, required for adequate strength with large openings. Panel widths are adjusted to allow for various plan configurations. (See *Richard Meier, Architect*, New York, 1976, for further details.) Panels were fabricated by Trio Industries.



## Technics: exterior wall panels

the weight and thickness; these developments allow the production of panels which weigh roughly 25 percent (or less) of comparably sized precast concrete units. At least two manufacturers are offering panels using modified concrete mixtures. One system mixes fiberglass with concrete; the chopped glass fibers are combined with concrete in a spray head used to coat the inside of a mold. The cured panel that results looks like precast concrete, but is a shell reinforced by the chopped glass throughout. The process can be used to mold elements of trim or for two-story-high wall segments. Because of the mixture's integral strength, great latitude exists in design configurations; section depth can vary widely and corners can be precise or rounded, as desired.

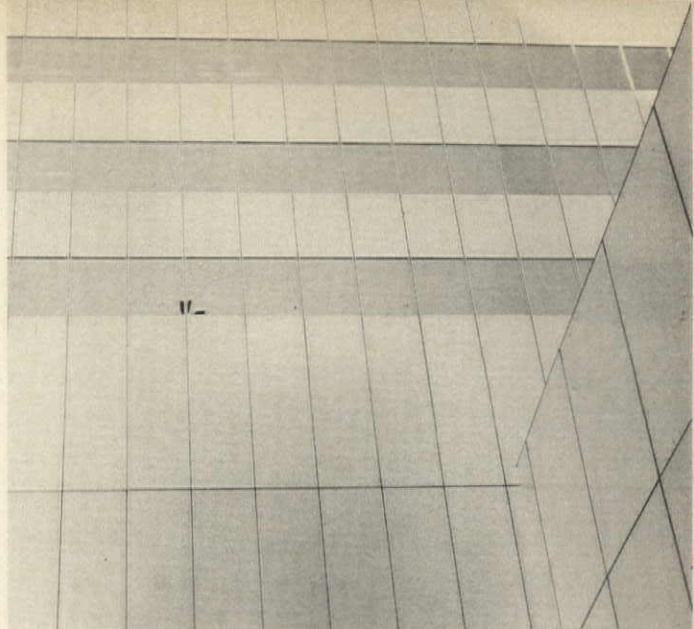
Another panel system uses a light gauge galvanized steel frame (studs), gypsum or foam backer board, expanded metal lath, aluminum or PVC casing bead, and  $\frac{1}{4}$  in. to  $\frac{3}{4}$  in. of portland cement or concrete modified by polymers. A variety of surfaces is offered, all sealed with a matte acrylic glaze. With modified concrete panels, the surface may be brushed, sandblasted, or ground to the desired texture. Insulation may be incorporated within the steel frame. Various impact, wind load, and flamespread tests have been run on these panels, reportedly with good results. Over 230,000 sq ft of this material was used on City Center Square in Kansas City, by Skidmore, Owings & Merrill.

### Après concrete

What follows concrete? While not concrete by one of Webster's definitions, another new material might conform to a second definition: "A mass formed by concretion or coalescence of separate particles of matter in one body." Six-inch-deep steel truss frames are covered with a woven fiberglass for reinforcement, and then faced with a  $\frac{3}{4}$ -in. material made up of a proprietary inert filler, resin, and sand. The mixture looks like concrete, and is capable of the forming variety of that material, yet its weight (6.2 pounds per sq ft) is, again, 25 percent of a comparable concrete composition. The resinous wall system is said to be impervious to acids found in normal urban atmosphere. The system has been used on the podium and penthouse structures of Detroit's Renaissance Center by John Portman & Associates (see p. 57). With an 8-in. steel truss frame, it is being used for a one-story office building in Ohio as a load-bearing wall. Insulation is installed behind the facing material at the factory.

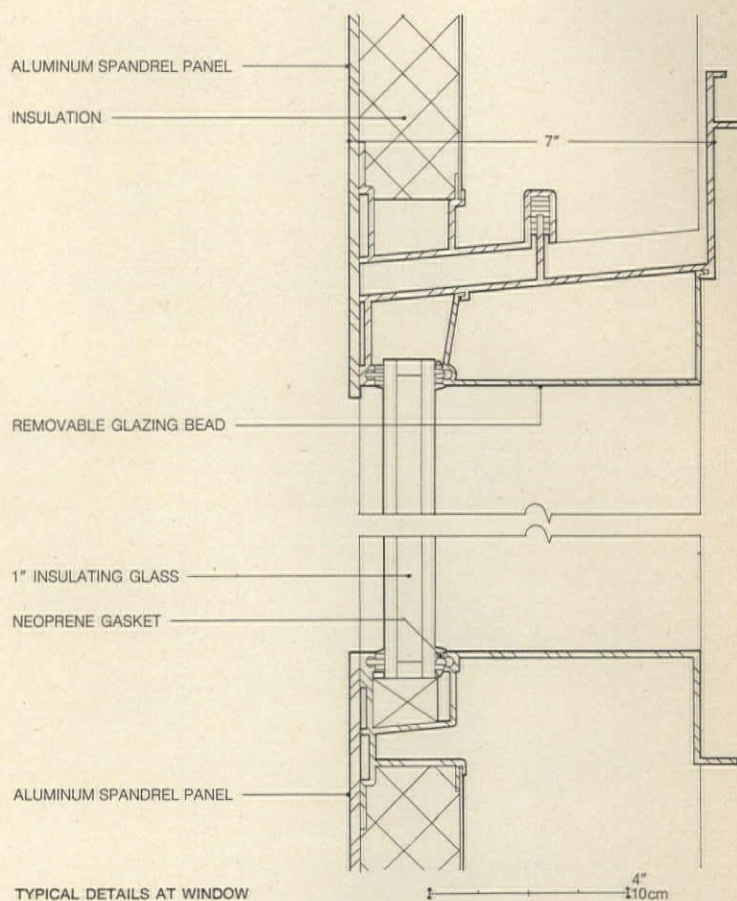
Other panels, fabricated on site at Charles Luckman's Hyatt-Regency Phoenix, are cement plaster over lath on light steel framing. Horizontal fabrication took place on each structurally complete floor as the building went up, while structural work went on above. Time, materials, and scaffolding savings were the major benefits noted by the contractor. All of the systems discussed as alternatives to precast concrete have one common feature—lighter weight with correspondingly lighter structural requirements. These features, along with ease of erection, warrant further consideration when the architect is considering building surface panels.

In addition to materials which are either cast or troweled



Courtesy Flou City Architectural Metals

On Citicorp tower, New York, by Hugh Stubbins & Associates, each 12'-9" high panel includes window and spandrel below. Aluminum plate is welded to "float" unconfined by stiffeners, to avoid thermal distortion.

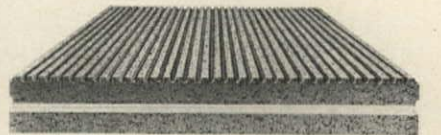
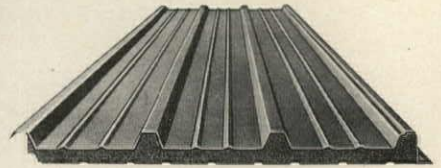
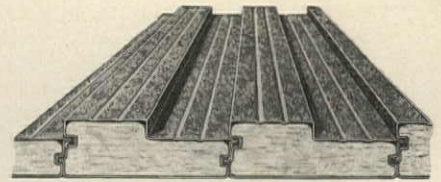
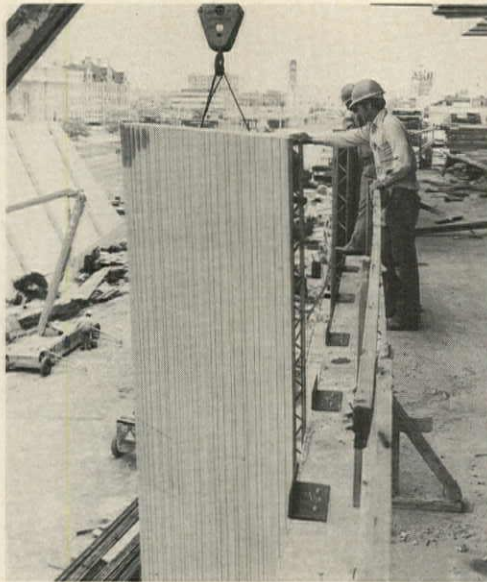


on, several other wall panel options exist. Some simulate traditional materials, such as brick, stone, or shingles, while others use the real thing in lightweight and/or panel form. In brick, for instance, a steel-framed module now marketed comprises a  $\frac{7}{16}$ -in.-thick brick face set in mastic on cement asbestos board. The bricks, in four sizes, thirty color options, and a variety of finishes or special glazes, can be laid up individually as well as in the panel form. Stone, both regular and in lightweight volcanic varieties, is also available on steel-framed modules. Panels of wood shingles, on the market for some time, offer considerable application time savings.

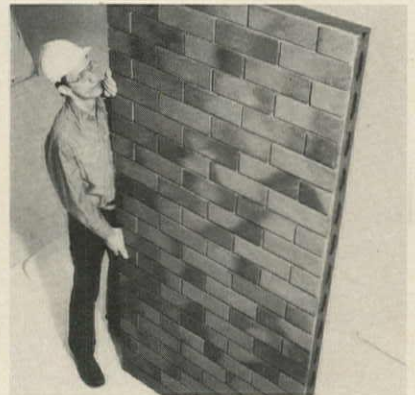
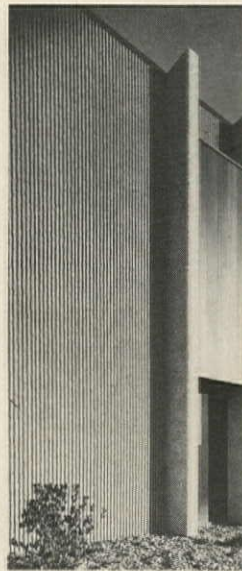
There is nothing in the rule book that says wall panels have to be opaque. Aluminum-framed fiberglass sand-

## Technics: exterior wall panels

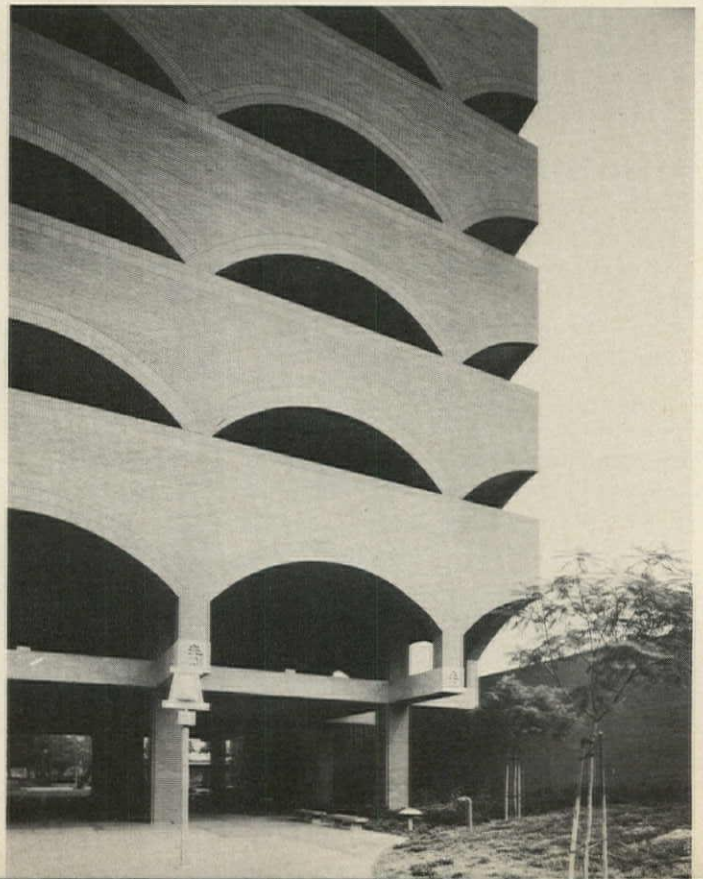
Originally designed to be clad with precast concrete panels as were previous complexes by John Portman & Associates, Renaissance Center in Detroit (p. 57) was actually clad with lightweight reinforced resinous concrete, in panels 8' x 24', factory-connected to steel truss stiffeners. Change of material was dictated by locally high cost of standard precast and availability of resinous alternative, now offered nationally by Uni-Systems Corp. of Dearborn, Mi. For similar situation on Hotel Bonaventure in Los Angeles (p. 52), architects found hand-applied stucco most economical.

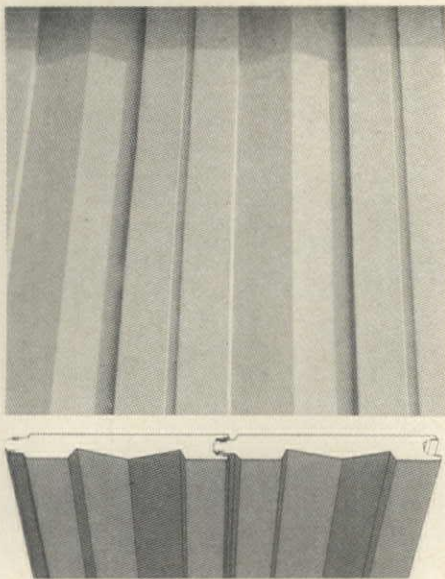


Corewall insulated precast wall panels, now produced in the U.S. by Butler Manufacturing Co., are available in various ribbed versions (above) in 4-ft and 8-ft widths. Panels were used in training center (left) designed by Brent Anderson.

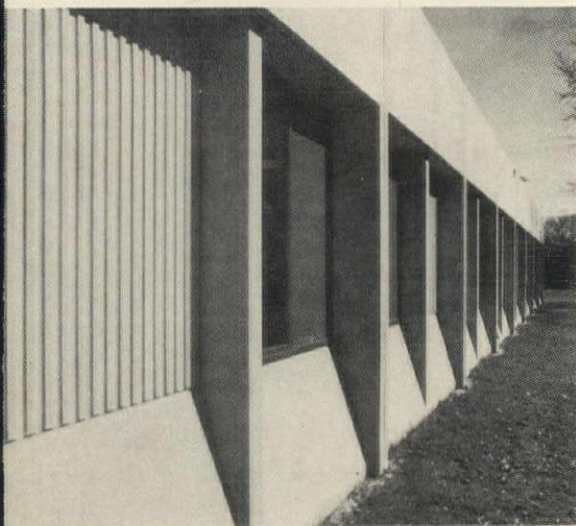
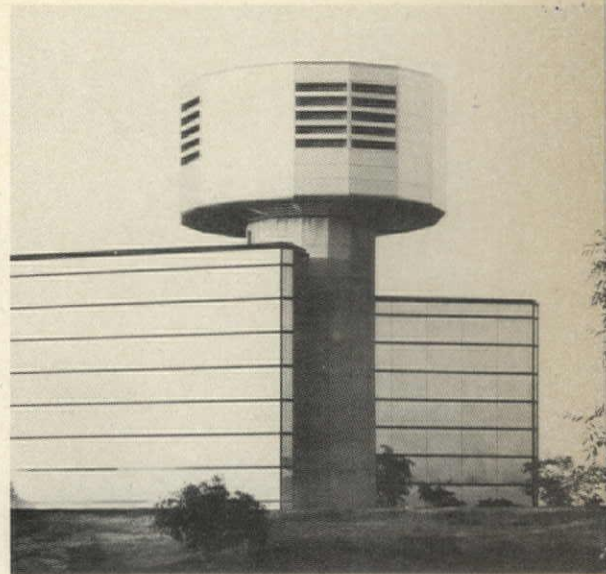


Mini-Brick modular wall panels (above), clad with real fired brick  $7/16$ -in. thick, were used by architects Ruhnau Evans Ruhnau Assocs. for arched façades of new city hall in Riverside, Ca (below).





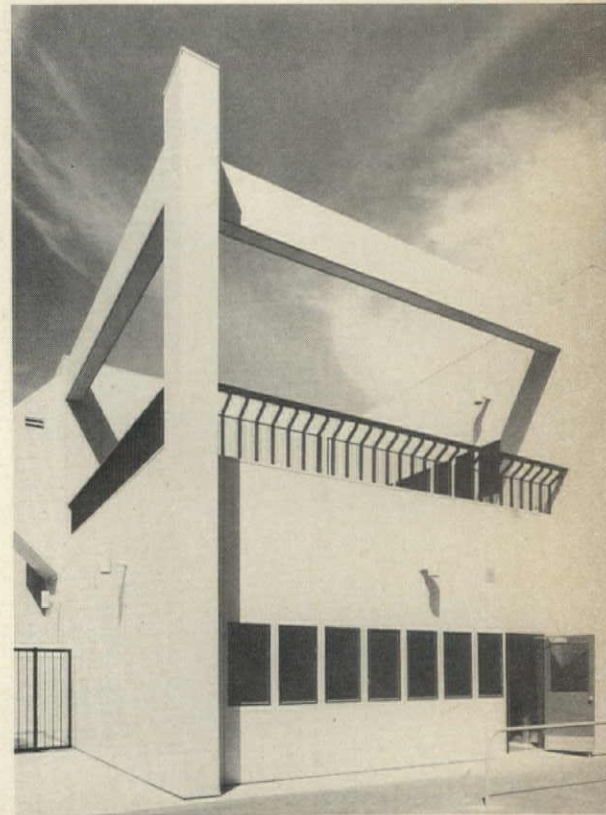
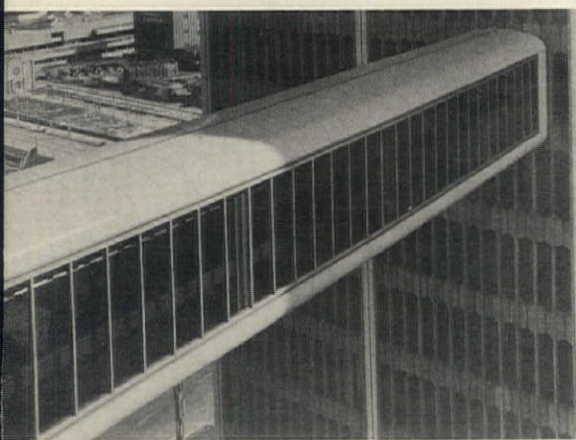
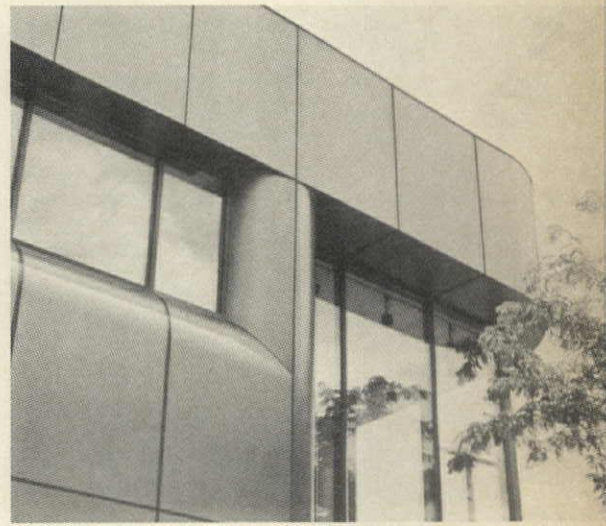
Kor/Met wall panels by Armco (left) consist of two enameled steel faces on 3-in. urethane core. Nonconductive tongue-and-groove joints at 2-ft intervals secure the units. Supporting clips fit into joint, with no thermal leakage. Stainless steel panels with geometric relief, made by Forms & Surfaces, Warnell Metal Division, clad tower of Fluor Corporation Headquarters complex (right) by Welton Becket Architects. Translucent panels of fiberglass sheet bonded to aluminum framing, produced by Kalwall, are available in various colors, including bronze tint used in recladding an industrial building for E.R. Squibb in New Brunswick, NJ (below).



Courtesy Owens-Corning Fiberglas



Panels of fiberglass-reinforced concrete (left) on Lutheran Social Services office building, Minneapolis (Sovik Mathre Sathrum Quanbeck, Architects) are  $\frac{3}{4}$ -in. thick and about  $\frac{1}{8}$  the weight of ordinary concrete panels. Alcoa Alply panels, used on academic building (above right) by J. Robert Hillier, architect, have contoured aluminum surfaces. "Skyramp" between two Detroit office towers (left) has top and bottom panels of porcelain-enameled steel on fiberglass core, made by Wolverine division of AllianceWall Corp.; architects were Rossetti Associates of Detroit. Variable module metal wall system produced by H.H. Robertson Company is used on complex Haight Elementary School (right); flat panels accurately scored or notched at the factory can be formed to desired contours on the site. Sloping side walls of athletic center at Rutgers University (The Hillier Group and The Eggers Group, architects) are clad with "Bold Rib" metal panels by The Binkley Co.



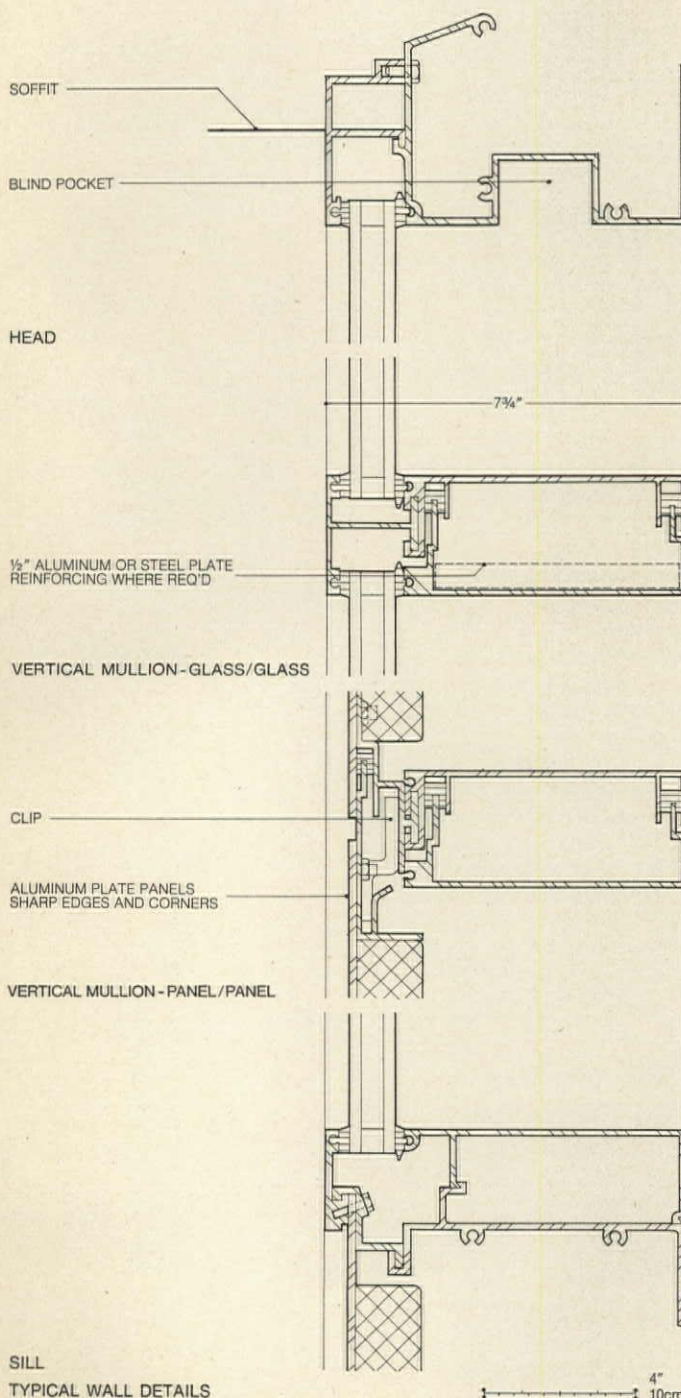
Victor's Photography

## Technics: exterior wall panels

Aluminum panel walls of Johns-Manville World Headquarters near Denver remain flat and distortion-free with temperature change because of a suspension system that allows surface to float free of supporting framework. Details were worked out by architects, The Architects Collaborative, and fabricator, Flour City.



Nick Wheeler



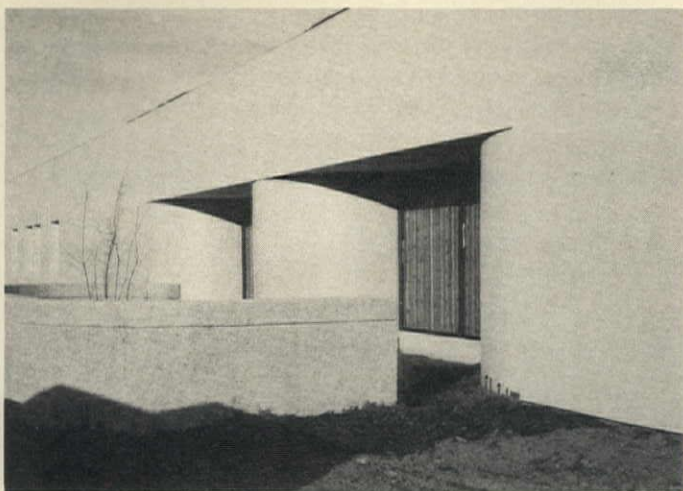
which units have a broad range of light transmission values, from 3 percent to 83 percent, and "U" factors between .10 and .40. Depending on the color of fiberglass selected, panels can have optional shading coefficients from .84 to under .04. In addition to the technical versatility, they are light in weight and easy to handle and install. The smooth surfaces tend to be self-cleaning through rain action, and require almost no maintenance.

### Say it in metal

In the recent years, possibly no panel field has proliferated like that of metal wall panels. Beginning with such inauspicious root uses as storage buildings and Quonset huts, metal systems have truly blossomed. They are offered in a staggering array of surface colors and finishes, as exterior skins only, as sandwiches including insulation, and often with a finished interior skin as well. Some are faced with steel, some with aluminum; some are shaped elaborately in finish or plan section, and some are flat—perhaps the most difficult shape to execute.

Beginning with the least complicated—and longest known—product type, the exterior skin single-thickness panel, there are many from which to choose. Most are attached at top and bottom by connectors of widely varying types, and many systems call for horizontal subgirts for mid-height stiffening. Some manufacturers make the whole system, including structure, roof, windows, doors, and accessories. Others concentrate on panels, copings, and connectors only, to be attached to a structure by others.

The majority of these are ribbed or shaped in numerous patterns. While architects often can incorporate the texture as part of their design, some have preferred a flat surface. It should be noted that the plan configuration is not a design frill thrown in by the manufacturer trying to add "taste" to the metal building. Several considerations cause the shape. The first, obviously, is compressive strength—resistance to crushing. The cross section bends add needed strength where needed; another reason for some of the specific shapes is the ability to nest panels for reduced shipping bulk. Designers should realize why the bends are there before asking for flat panels. That isn't to say that flat surfaces are not available, but might be pos-



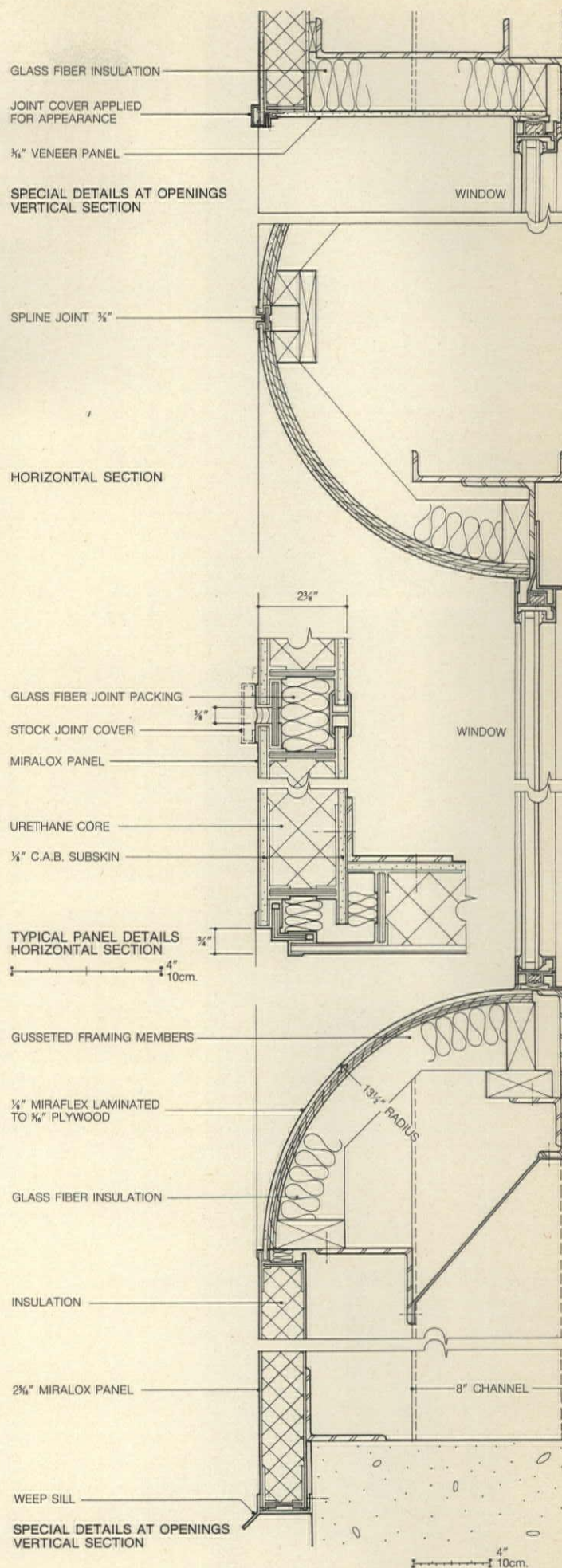
Radio Bible Class building designed by Daverman Assocs. has walls of Miralox panels, from GII (Glasweld International); curved jambs and sills are of Mirawall porcelain-enameled steel bonded to plywood.

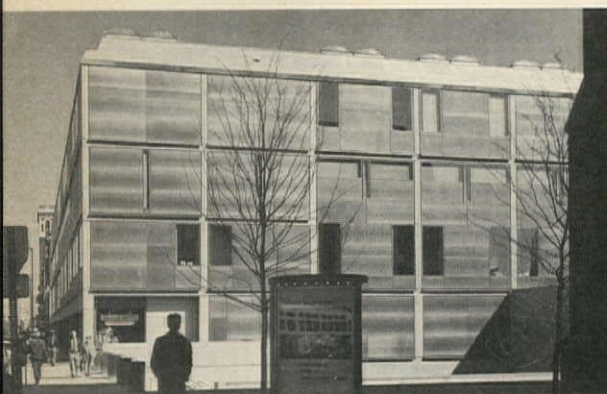
sible only at the cost of added reinforcement and weight.

The single-skin building is not, clearly, an insulated one. Insulation can be added in a number of conventional ways, as may a gypsum board inner surface. However, most manufacturers do not stop at offering only outer skins. Many offer additional components—clips, insulation, and inner skins—to complete the building envelope with catalog parts. Insulation values and corresponding wall section thicknesses can be adjusted to achieve desired results in most systems. Originally planned as a fully contained wall panel, the unit used on Richard Meier's Bronx State Developmental Center (p. 84) was insulated at the job site and finished inside with gypsum board walls. It is an example of how elegant even job-assembled walls can be. Many manufacturers, however, do offer panels which are one composite piece in cross section. Some contain honeycomb cores, others various types of semi-rigid perlite or foam insulation. These often gain enough compressive strength from core materials to allow flat or ribbed panels with considerable design precision. Processes have been developed for bending these panels for striking architectural effect. Panel joints, too, can be very precise and clean. Outside and inside face panels are thermally separated in the best systems, to prevent heat transfer at joints. The two faces may often be finished differently, including such finishes as chalkboard, as well as tough-finished color.

### Finishing touches

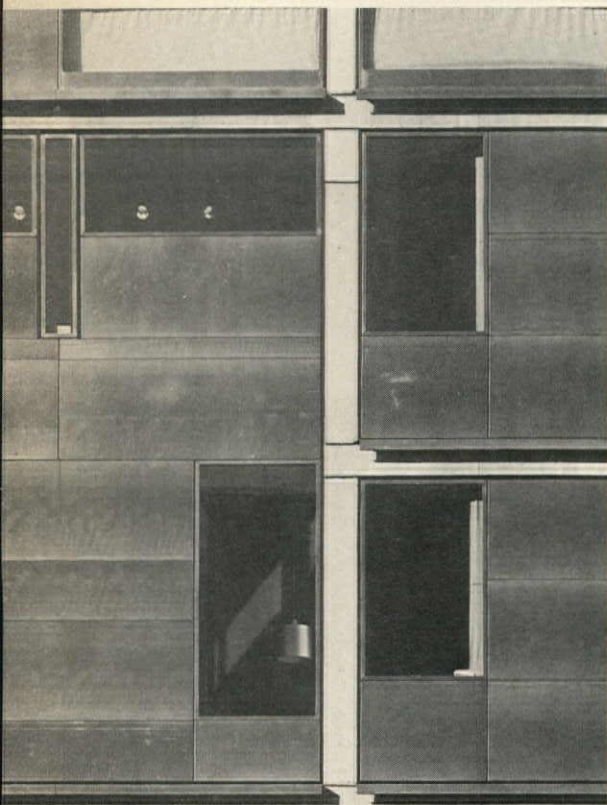
Surface coating options for metal wall panels are extremely varied. They may, of course, be field painted, or factory coated with numerous other things such as enamel, porcelain, Galbestos, or polyvinylidene fluoride based coatings. For a thorough review of coating possibilities, see the December 1974 P/A, pp. 95–103. There is an array of coatings, and within each type there are several levels of quality. The more expensive coatings, it stands to reason, give premium performance in terms of chalking, fading, cracking, or peeling. In addition to those characteristics, the tenacity with which coatings adhere is extremely important in the short as well as the long run. Bending operations on metal panel elements can cause crazing and cracks in the coating if adhesion is



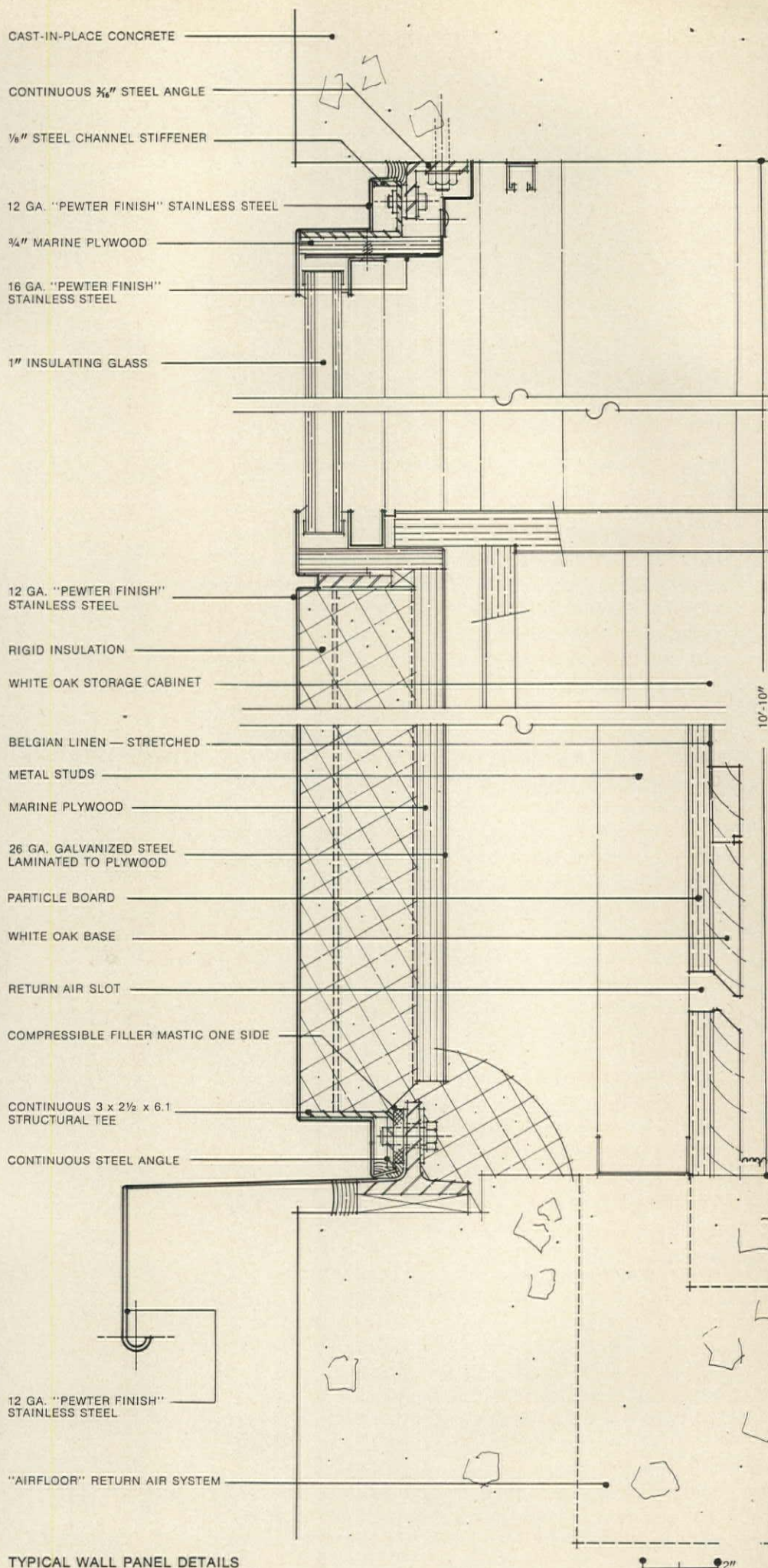
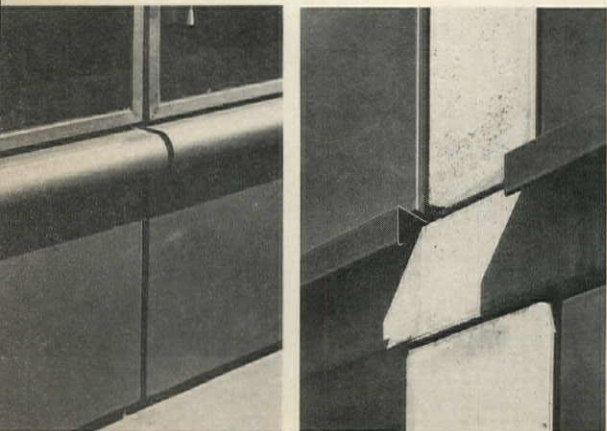


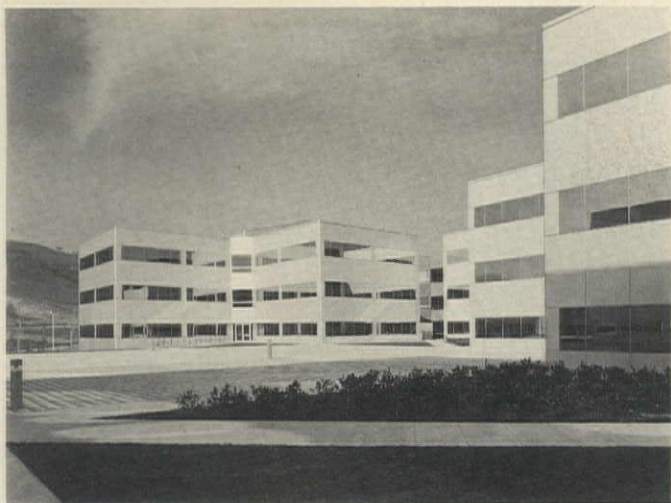
Photos: Cervin Robinson

The Yale Center for British Art by Louis Kahn, completed after his death by Pellecchia & Meyers, Architects, has wall panels of heavy stainless steel—with a dull, variable surface produced by omitting final baths—set between exposed concrete structural members.



Kahn's intention to expose the hollowness of the panels is illustrated by details at drip line and at base of building (below). Panels were fabricated by Trio Industries.





Colorful panels of IBM lab at San Jose, Ca. designed by McCue, Boone & Tomsick, have been detailed to move with earthquake forces. Eugene O. Tofflemire Assocs. were wall consultants; fabrication by Cupples.

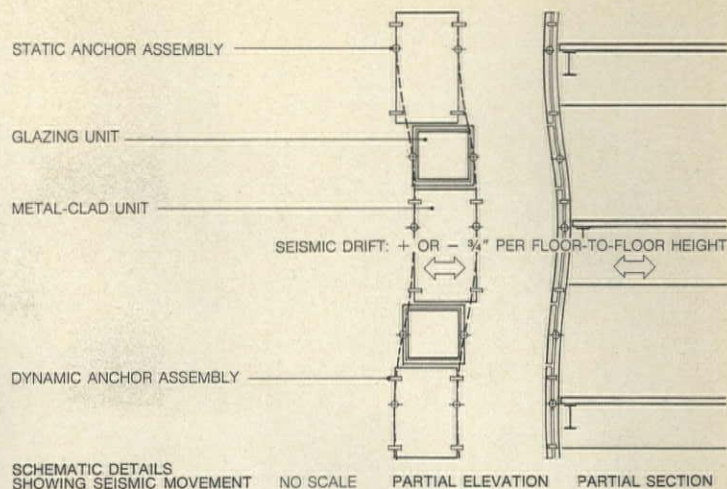
poor. Investigate the coatings as carefully as the panel, and stick with reputable, solid manufacturers of both elements.

Joints and connections are the other major detail area to consider with care. In all exterior wall panel systems, joints must accommodate panel movement for thermal, structural, wind, or seismic reasons. Depending on the location and specific condition, one may outweigh the other in terms of importance. As some of the details shown in this article attest, there are innumerable good examples to follow. For a most thorough exposition of sealants and caulks, see P/A's discussion in December 1975, pp. 74-81. Panel joints are controlled by careful detailing of connectors and sealing devices. Within the limits of this article it will have to suffice to say that sealants are a critical point of failure in all wall panel systems. Be sure that, where needed, sealants are matched to the task they are asked to perform.

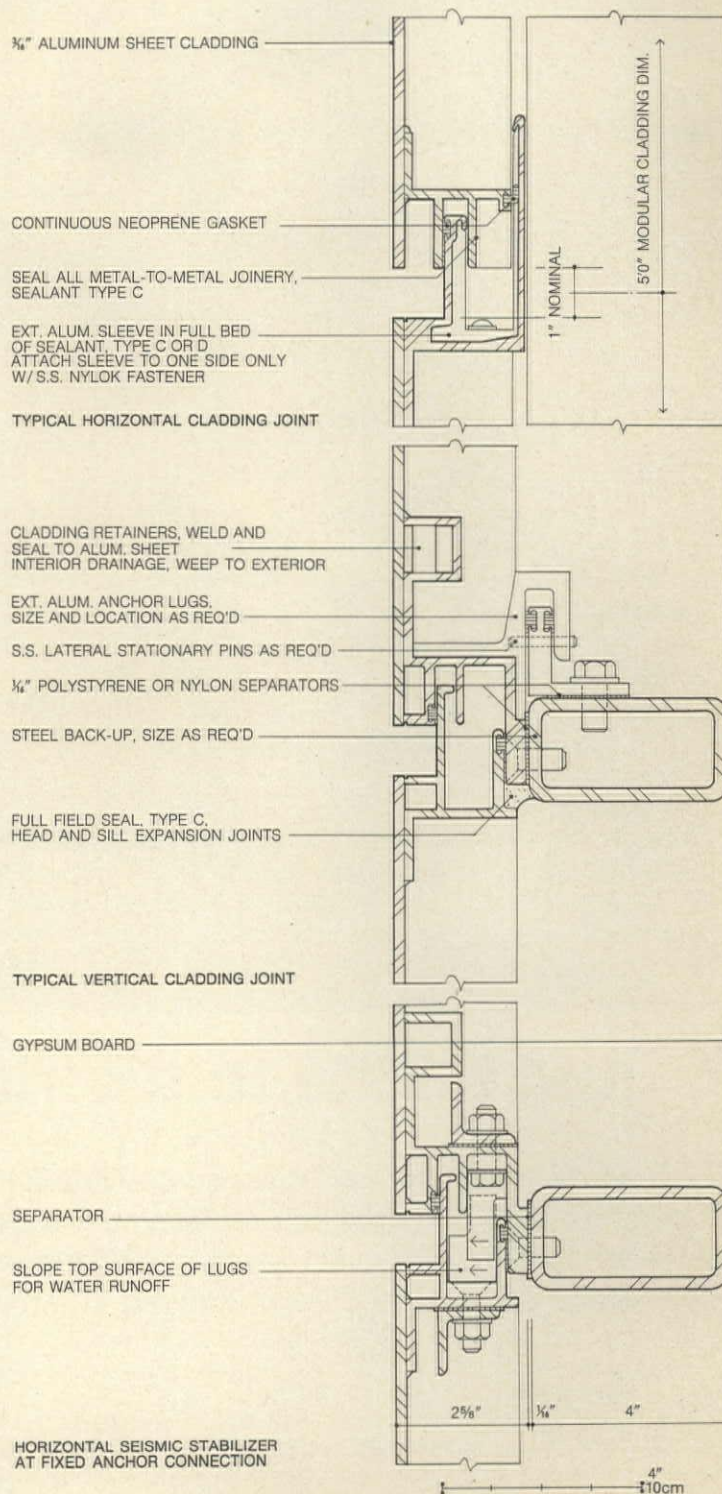
In terms of quality, the architectural implications of exterior wall panels have never been greater than they are today. New projects are stretching the imagination of the manufacturer, the public, and even the architect. There is a new awareness in both the architectural and the producer worlds that technological advances have expanded the potential to accomplish new peaks in architectural expression. Industry is ready with the expertise. It is asking for new ideas and new problems to solve, to be posed by knowledgeable designers. [Jim Murphy]

#### Acknowledgments

We wish to thank the following companies for their help in preparing this article: AllianceWall Corp.; Aluminum Company of America; American Iron & Steel Institute (Hill & Knowlton); Architectural Panels, Inc. (John H. Rosen Advertising); Armco Steel Corp.; Bally Case & Cooler; The Binkley Co.; W.R. Bonsal Co.; Butler Manufacturing Co. (Valentine-Radford Advertising); Cupples; De Soto Inc.; Featherock Inc.; Finestone Corp.; Flour City Architectural Metals; Forms & Surfaces; GII, formerly Glasweld International Inc. (David W. Evans, Inc.); Glidden; The Hillier Group, Architects; INRYCO, Inc.; Johns-Manville Sales Corp.; Kaiser Aluminum & Chemical Corp.; Kalwall Corp.; Richard Meier & Assocs., Architects; Owens-Corning Fiberglas; Pacific Clay Products Inc. (Reeds & Farris); Pellicchia & Meyers, Architects; Pennwalt Corp. (Wright Assocs.); John Portman & Assocs., Architects; PPG Coatings; Reynolds Aluminum; H.H. Robertson Co. (James G. Busse Public Relations); Elwin G. Smith, Division of Cyclops Corp.; Hugh Stubbins & Assocs., Architects; The Architects Collaborative; Eugene O. Tofflemire Assocs.; Tremco; Trio Industries, Inc.; Uni-Systems Corp.; Vincent Brass & Aluminum.



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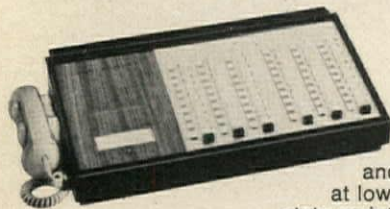
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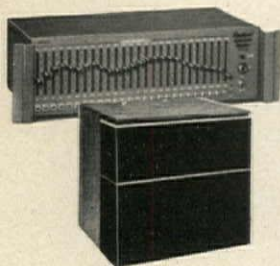


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## **Books**

# **Wright on**

**Frank Lloyd Wright's Usonian Houses: The Case for Organic Architecture** by John Sergeant. New York, Watson-Guptyl Pub., Whitney Library of Design. 207 pp. 1976. \$24.50.

Reviewed by Robert C. Twombly, author of *Frank Lloyd Wright: An Interpretive Biography*, and assoc. prof. of history and urban studies at City College, New York.

When Frank Lloyd Wright put words on paper the result was often theoretical mumbo-jumbo. Not always, of course. Several early essays and his books of the 1930s were reasonably intelligible, lending themselves to a comprehensive reconstruction of his architectural philosophy. But rarely did Wright highlight the particular. Except for *The Natural House* (1954), his writing actually had little direct application.

John Sergeant's book has made the learning process easier by explaining the nuts-and-bolts of Usonian designs in the context of Wright's social and architectural ideas, and by drawing implications for today's homebuilders and architects. Wright's theory and practice have never been made so accessible.

But if Sergeant's book is a builder's manual, it is also a philosophical treatise. We all know about Usonians, Wright's middle-income, partially prefabricated, gravity-heated houses of the late 1930s and early 1940s. And most of us know about Broadacre City, his plan for a decentralized urban America, first announced in 1935, a year before construction of the first Usonians. Sergeant has demonstrated conclusively that one cannot be understood without the other, or to put it another way, that in Broadacres everyone would live in a Usonian home (or an "organic" one at least) so that in a real sense each residential commission gave Wright an opportunity to send out a missionary of the new America.

Although he grew critical of monopolistic capitalism, Wright was a capitalist and a humanist and a democrat, unlikely as that combination seems. "He was attempting," Sergeant writes, "to give architectural form to what he believed to be the most humane and progressive thought of his generation." Broadacres therefore aimed to disperse capital as well as people, for Wright was convinced that cities, governments, and corporations had gotten too large, too powerful, and too anti-individualistic.

Usonians and the residential architecture in Broadacres were consequently intended to be "self-build" structures. Each home, erected from a simple design scheme—admirably dissected by Sergeant—would vary for each family, thus circumventing aesthetic (and capitalistic) regimentation. His attempts to modify capitalism were never very effective.

His efforts were not entirely unsuccessful, however. Sergeant shows in striking detail the many ways Usonian homes conserved energy, were economical, and

[continued on page 100]

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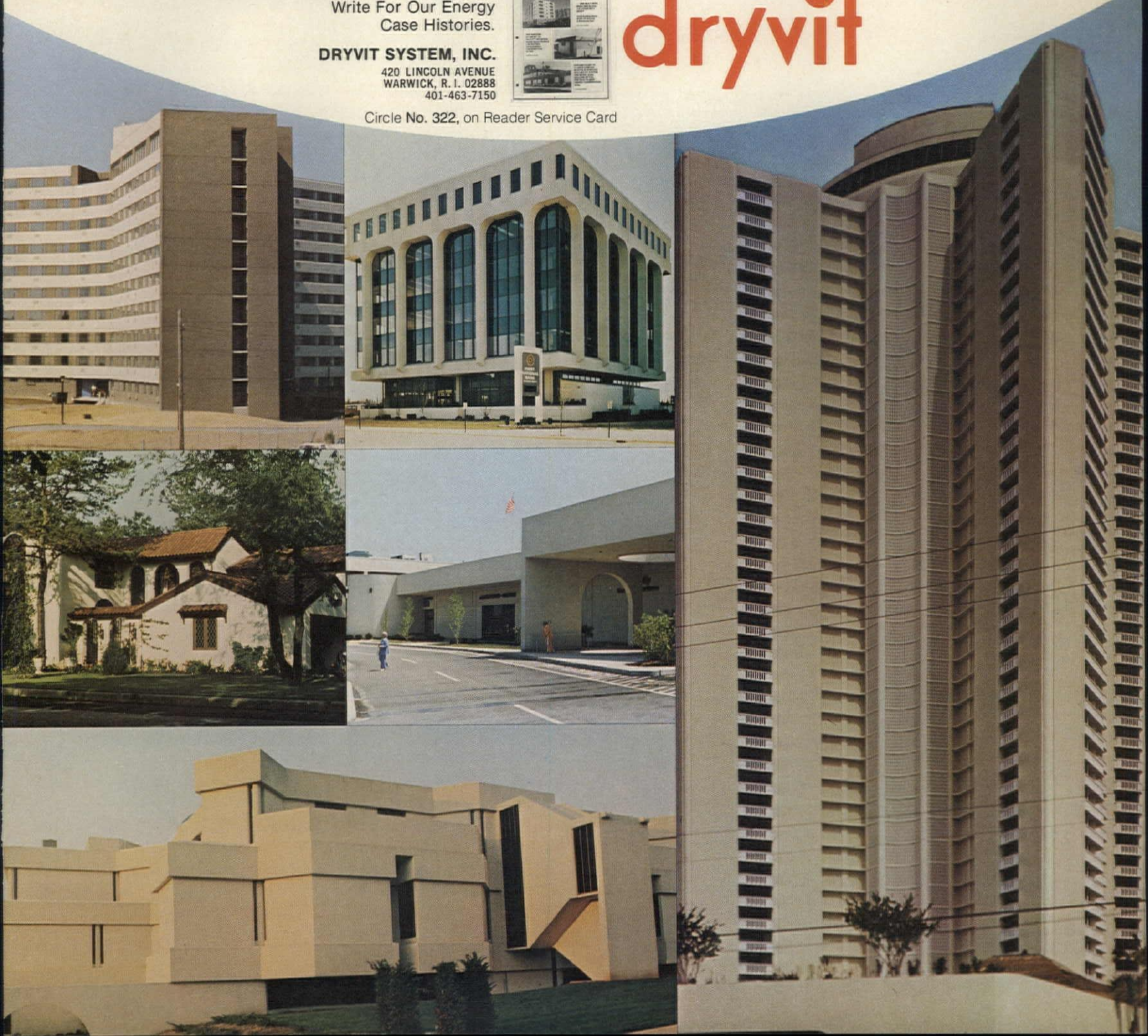
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**Books** continued from page 98

broadened aesthetic, social, and intellectual vistas. He demonstrates their capacity for expansion and alteration, and their long-run cost-effectiveness. Sergeant also discusses Wright's experiments with multiple and cooperative housing and planned communities, applauding their efficient land utilization without sacrifice of privacy, their communal economies in energy use, landscaping, materials purchase, play and recreational facilities, and food production; in short, their enhanced self-sufficiency in a world facing essential shortages. Architects and homebuilders will find great practical value in this book.

With the Taliesin Fellowship acting as a link between the Usonians and Broadacres—Taliesin life-style being what Wright envisioned for the re-urbanized nation—Sergeant examines the intellectual underpinnings and social purposes of the decentralization scheme. Next comes Wright's perpetual effort to make his ideas more available through do-it-yourself designs, prefabrication, concrete block projects, and through publicity campaigns, including a fascinating revelation of how two well-publicized homes in Oskaloosa, Iowa, touched off something of a local architectural renaissance during the 1950s. The book concludes with Wright's legacies—accounts of present-day "homemade homes," alternative communities, ecological and environmental design sanctities, an English new town, and an analysis of Bruce Goff, whom Sergeant considers the most imaginative architect practicing in Wright's tradition.

If I have a complaint with this fascinating, immensely intelligent, and exceptionally helpful book, it is Sergeant's uncritical acceptance of the impracticality of Wright's practicalities. Broadacre City, if realized, would *not* have been utopian; despite its quirks, it makes enormous sense in today's energy-short, economically inequitable, socially unjust world. It is anything but a hair-brained scheme, as many critics have claimed. Based on small businesses, community controlled social services and governmental institutions, reasonably equitable land distribution, strict regulation of technology, publicly owned utilities, and many more anti-agglomeration features, Broadacre City would not be congenial to the present corporate-state hegemony. As such, it has much to offer for planetary survival. But as a radical reorientation of society, it carried with it no means of implementation.

Broadacre City is essentially a post-revolutionary blueprint. But revolutions are political events, and Wright rarely discussed politics. He thought, and Sergeant apparently agrees, that the drift toward physical decentralization will continue, bringing with it an "unexploitative capitalism," which seems to me a contradiction in terms. The flaw in Wright's plan and in Sergeant's interpretation is that radical restructurings of political and economic systems do not grow organically; revolutions are not produced by evolutionary drift.

But with Wright the flaw should not obscure the central point: that his career was dedicated to building a sensible and humane world. And with Sergeant, it hardly detracts from an exceptional book that ought to be required reading for architects, planners, critics, and those of us who live with the consequences of their work. □.



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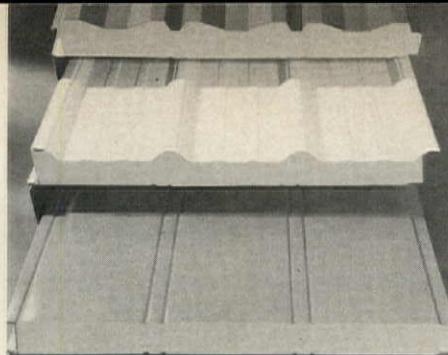
# Products and literature

## Exterior wall panels

The items below specifically relate to the technics article beginning on p. 83 and are grouped here for the reader's convenience.

**Stucco 316** is a lightweight overlaid plywood with an embossed stucco texture. It is manufactured by bonding resin impregnated overlays, under heat and pressure, to plywood. Panel may be applied directly to studs or over sheathing. It is available in a cream color, ready for finishing in user's color choice. The panel also comes prefinished white in a special mar-resistant, solid color acrylic latex stain. Standard sizes are 4 ft widths and in 8, 9, and 10-ft lengths and in  $\frac{3}{8}$  in. and  $\frac{5}{8}$  in. thickness. Simpson Timber Company.

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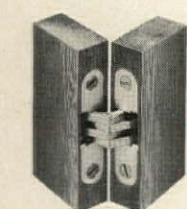
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**Insulated roof and wall panels** for standard and special metal building systems. StarTherm panels are a composite of painted metal skins bonded to a rigid foam insulation core with a nonmetallic member interlocking the interior and exterior skins. They come in lengths up to 22 ft. Interior panel surfaces are available in Marble White paint finishes with nine colors available for the exterior. Star Manufacturing. Circle 102 on reader service card

**Ar/Tec 20 wall panel**, is precision roll-formed into 20 in. modules, fabricated from 26-gauge galvanized steel with factory-applied color finish. Colors available are yellow, beige, brown, green, and white. The exterior metal wall panels are secured to the building's structural system with self-drilling fasteners. Optional cover strips are available to conceal the fastener. Because the panels are symmetrical, they can be quickly assembled left to right or right to left. The system requires no side lap fasteners since the lap is concealed by the rib design. Pascoe Steel. Circle 103 on reader service card

**Perma Rib I** concealed fastener panel, manufactured in .032 and .040 in. gauges, is available in a stucco-embossed natural finish or any of ten color finishes. Panels stack compactly and require less storage space than most other designs. No special tools are required for installation. Extruded clips for joining the panel to structural members are unnecessary, but may be used. Aluminum Company of America. Circle 104 on reader service card [continued on page 104]



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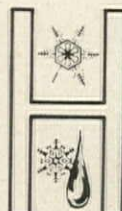


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## Products continued from page 102

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**Redex.** Exterior grade particleboard of Douglas fir and redwood particles is bonded with phenolic resin. All edges are sealed on all four sides of each panel. It is available square edged or tongue and groove edge with full 4' x 8' face. Maker states product can be nailed, stapled, passes density control, internal bond and rupture resistance tests, won't check or delaminate, and resists warping. Suitable for underlayment or other sub-flooring and as soffit material. Louisiana-Pacific.

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## Literature

**Zip-Rib®** aluminum roofing and siding. Four-color brochure illustrates and describes new 16-in. panels in addition to the standard 12-

n. panels. Installation details and usage are illustrated, specifications are included. Kaiser Aluminum & Chemical Sales, Inc.  
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**Building panels.** Color brochures describe Qasal exterior panels that are machine-made from white Portland cement, illustrate details of hanging systems and physical and mechanical properties in chart form, and give fastener design data. Veneer and insulating building panels brochure includes charts of physical properties, colors, and gives specifications. Glasweld International.

Circle 201 on reader service card

**Composite panel systems.** Brochure contains product description of modified cement and modified concrete composite panels, gives typical construction details, and results of performance tests. Finestone Corporation.

Circle 202 on reader service card

**Architectural finishes.** Kynar 500® is a fluorocarbon resin used as the basic vehicle in producing exterior finishes for aluminum, galvanized steel, or aluminized steel. Four-color brochure gives case histories and guide specifications. Pennwalt Corporation.

Circle 203 on reader service card

**Laminated panels** are composed of mineral fiber/cement panels bonded under high pressure to both sides of rigid, insulating core materials. Brochure covers the three types of core

materials used, in terms of composition, properties, and applications. Also included are sections on facing materials, finishes, technical data on the panels and an installation guide. Johns-Manville.  
Circle 204 on reader service card

**Metal building panels.** Color brochure presents standard line of metal building panels for walls, roofs, and fascia, includes specifications, gives technical data, and illustrates colors and finishes available. Architectural Panels, Inc.  
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**Aluminum roofing and siding.** Updated brochure contains general and detailed product information, load/span data and design criteria, general specifications, and illustrates color finishes that are available. Reynolds Metals Company.

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[continued on page 106]



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Write today for technical data and design assistance, and for names of extruders and molders using Plexiglas DR.

Plexiglas acrylic plastic is a combustible thermoplastic. Observe fire precautions appropriate for comparable forms of wood. For building uses, check code approvals. Impact resistance a factor of thickness. Avoid exposure to heat or aromatic solvents. Clean with soap and water. Avoid abrasives.

**ROHM  
AND  
HAAS**   
PHILADELPHIA, PA 19105

Circle No. 341, on Reader Service Card

## Products continued from page 104

### Granostruct prefabricated wall systems.

Welded structural steel stud frames are combined with rigid cement asbestos board and a wide range of exterior surfacings to create lightweight components. Custom-shaped contours are fabricated for fascias, spandrels, window surrounds, column covers, and other exterior areas. An extensive range of aggregate, textured, or sculptured finishes are available to meet any design requirement. Brochure gives physical data, product information, test data, and typical details. Cement Enamel Development, Inc.

Circle 208 on reader service card

**Mini-Bricks** are said to be kiln-fired in exactly the same way as architectural face bricks except that they are wire cut to  $7/16$  in. prior to firing—about  $1/7$ th the thickness of a standard brick. They are available in sizes reflecting the surface of certain standard face brick dimensions and in modules corresponding to 4" x 8" tile patterns. Over 30 variations in colors, finishes, and special glazes are available. Some are especially formulated for paver use; all may be used for veneering. Brochure. Pacific Clay Building Products.

Circle 209 on reader service card

### Architectural panels and roofing systems.

According to manufacturer, all exposed fasteners are eliminated as panels snap into place; paint is mill applied to galvanized steel; no

sheathing is required. Panels are applied on nailing strips spaced 5 ft o.c. max. They are furnished in exact lengths required—end laps are eliminated. A variety of color finishes is available. Four-color brochure gives case histories and construction details. Childers Manufacturing Company.

Circle 210 on reader service card

**Surewall® surface bonding cement.** Brochure provides data required for designing buildings of surface bonded masonry construction which requires no mortar in the erection of concrete block walls to architects, designers, and specifiers. Concrete blocks are dry stacked and surface bonded with a stuccolike application of a surface bonding cement. Brochure outlines some of the building requirements as well as generally accepted building practices for masonry construction and surewall applications. W.R. Bonsal Company.

Circle 211 on reader service card

**Exposed aggregate precast concrete panels** for architectural applications are illustrated and described in full-color brochure. Included are descriptions of the various depths of reveals obtainable, each illustrated with detailed color photographs. Examples of exposed aggregate on several buildings are shown as well as documented comparison of exposed aggregate versus smooth concrete. Preco Industries, Ltd.

Circle 212 on reader service card

**Wall and roof systems.** A wide range of metal panel profiles, assembled systems, and finishes

available are described and illustrated in color brochure. Technical information and specifications are included as are case histories of successful installations. The Binkley Company.

Circle 213 on reader service card

**Energy** and how to conserve it is subject of brochure which contains information concerning insulation and metal wall and roof systems. Tables give comparative savings of initial equipment costs. Butler Manufacturing Company.

Circle 214 on reader service card

## Other products

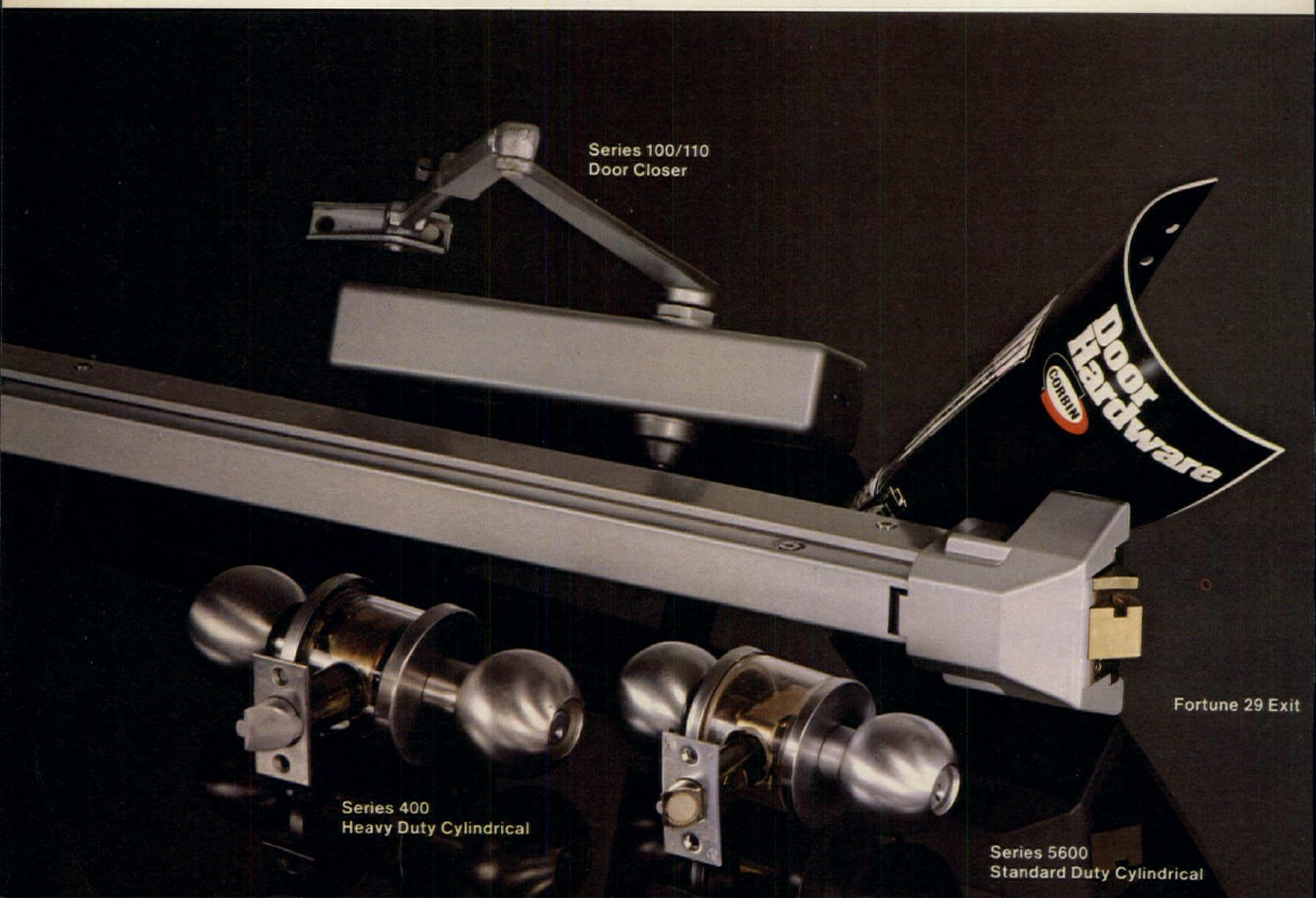
### Krypton Incandescent Watt-Watcher lamps.

Available in 54, 90, and 135 watts, the lamps replace 60, 100, and 150 watt light bulbs. According to the maker, a Krypton lamp, rated at 3500 consumer hours, will outlast seven ordinary incandescents. Verd-A-Ray Corporation.

Circle 107 on reader service card

**Sound isolation floor system.** High-density isolation pads are bonded into die cut holes in the low-density fiberglass, which is supplied in a roll, 4' x 50'. Rolls have standard one or two ft centerline pad spacings and are available in support ratings up to 1600 lb per sq ft. The flexible isolation pads support plywood sheeting that serves as a pouring form for the floating concrete slab. Peabody Noise Control Inc.

Circle 108 on reader service card



Series 100/110  
Door Closer

Series 400  
Heavy Duty Cylindrical

Series 5600  
Standard Duty Cylindrical

Fortune 29 Exit

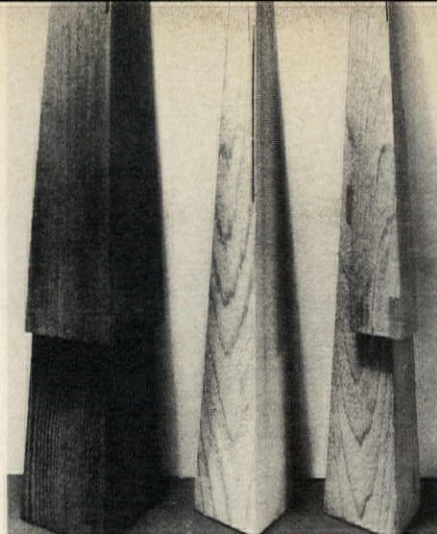
**Foam-in-place fire stop.** Chase-Foam is said to expand two to three times its liquid volume after being injected into a dammed floor or wall penetration, forming a fire, smoke, gas, and water resistant seal. It can be applied with a disposable cartridge or power gun for large applications. The foam sets in less than three minutes and remains soft and pliable. Chase Technology Corporation.

Circle 109 on reader service card

**Suede-Tex** is available in a pvc formulation in two weights: standard weight with cotton stretch back comes in a range of 87 colors; 14-oz wall suede has cotton backing and is available in 15 colors. Both groups are 54 in. wide. Suede-Tex. Circle 110 on reader service card

**Dock seal** extends a full 20 in. from dock wall to truck. It is made of 14-oz Hypalon-coated nylon fabric. Each unit features guide strips to facilitate centering of truck to dock. Seal need be inflated only when used. Airlock Dock Seal. Circle 111 on reader service card

**Central system humidifier.** Compact 24-vac Waltronic is designed for flexible mounting on the plenum, return or supply duct of any forced air heating system. It can also be mounted under the duct with the aid of an optional kit. It is a single by-pass unit and may be ducted from either the right or the left side. The unit is rated at up to 16.8 gal per day at 180F. It is equipped with a 24-vac, 3.0 watt motor and has a pull-out reservoir. Walton Laboratories. Circle 112 on reader service card



Solid corner shingles

**Solid-corner shingles** are made of solid cedar pre-cut to 90 degrees. They are pre-cut to 18-in. lengths in red cedar and 16-in. in white. Both come in standard thicknesses. Solid-Corner Shingle Co., Inc.

Circle 113 on reader service card

**Suspended plan filing.** According to manufacturer, a single unit can accommodate up to 2000 full width or up to 8000 drawings of various sizes; all drawings are individually suspended at an equal height; heading or color coding on top of file-bar allows dividing and sub-dividing; punched riders take the place of temporarily removed drawings as a visible record of missing drawings. A single unit requires only 11 sq ft of floorspace and files all sizes up to 60 in. in width including metric sizes. Special size units are also available. United Filing Corporation Ltd. Circle 114 on reader service card



Retrofit insulation system

**Retrofit insulation system.** Styrofoam brand insulation is a rigid, extruded polystyrene foam manufactured in 3/4-in.-thick board form with tongue and groove edges. A new insulation concept is to add more insulation from the outside of a structure instead of the inside. The 2' x 8' and 4' x 8' panels of Styrofoam TG are nailed directly over the home's original exterior fitting together with tongue and groove and wrapping the house in insulation. New siding is then applied directly over the insulation boards. The retrofit siding/insulation system is available nationally through retail outlets representing remodeling contractors. Dow Chemical USA. Circle 115 on reader service card

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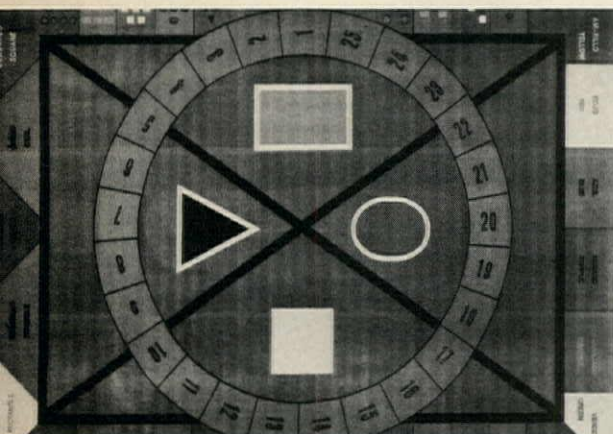


The Security Analysts.



HARDWARE DIVISION, EMHART INDUSTRIES, INC.  
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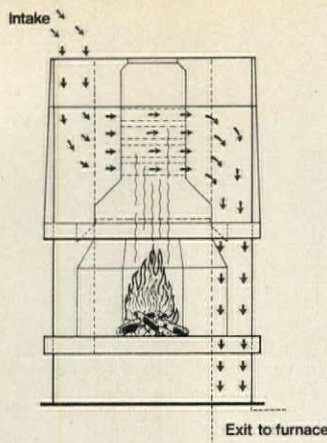
Circle No. 319, on Reader Service Card



Educational carpet

**Educational carpet.** The first pattern, called the "Edu-Carpets Motivation Mat," features a large 8-ft circle with equal segments numbered one through 25. Maker states that "classroom testing has proved the design successful in motivating and aiding children in learning colors, basic geometric shapes, numbers, counting, simple addition, and subtraction, etc." The mat is bilingual as all words are shown in both English and Spanish. It is a 9' x 12' pattern repeat and is available in rugs, or for wall-to-wall installation. Edu-Carpets.

Circle 116 on reader service card



**Fireplace** that ties to central heating ducts uses any solid fuel. Connected with the central thermostat, the Lighthouse fireplace, when lit, is called on first to supply heat anywhere in the building. The main furnace operates only when the fireplace is not lit or when it is unable to supply all the heat required. It can be installed anywhere without floor reinforcement or other structural change. Normal interior house air is taken from the cool air return of the home's existing duct work, forced over the heat exchanger, and returned to the hot air return of the home's duct work to be distributed throughout the house by existing forced air furnace fan. The Lighthouse plenum contains a thermister which turns the furnace fan on and off as needed. The unit can be installed flush to a wall, partly recessed in the wall, or extending through the wall to provide fireplaces for two rooms. The Lighthouse.

Circle 117 on reader service card

**Square tubing** is available in a variety of cross-sectional dimensions and gauges, in both mild and high strength steel. It may be ordered raw or hot-dip zinc galvanized. Specialized uses include furniture, tools, storage racks, merchandise displays, construction framework, railings, others. Allied Tube and Conduit Corp. Circle 118 on reader service card

**Power-Strut** space frame for modular roof construction has three basic component parts: structural tubing (straight and "S" shaped), and connecting plates which are assembled with specially designed nuts and bolts. Units can be field-fabricated on the ground or in place at the job site, into standard 4 ft or 5 ft modules. The modules are then joined to form roof units of various sizes and spans. Van Huffel Tube Corporation.

Circle 119 on reader service card

**Aluminum 'S' tile.** The product combines a cap tile and pan tile in a single piece of .019 S-shaped aluminum. The "S" tiles interlock from tile to tile on 10½ in. centers and are suitable for use on roofs, fascia panels, and mansards. In addition, they can be used on mobile homes and other unreinforced structures. The two standard colors available are tile red and burnt red. A baked acrylic emulsion finish protects against change in color. Architectural Engineering Products Company.

Circle 120 on reader service card

[continued on page 110]

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**Products** continued from page 108

**Acoustic screens.** Besides free-standing usage, the screens are designed to support the company's line of Veripanel desk components, thereby eliminating certain end and back panels of desks and credenzas that attach to the screens. Caps and bases are offered in oak and walnut. Screen widths and heights are offered in a wide range of sizes. Hiebert, Inc.  
*Circle 121 on reader service card*

**Reflector bulb.** Said to be especially suited for recessed ceiling fixtures, such as "high hat" units, the reflector bulb has an elliptical shape designed to extend the light further from the face of the bulb. Most of the light beam is focused through a point approximately 2 in. in front of the bulb surface. Average rated life is 2000 hrs. Westinghouse Electric Corporation.  
*Circle 122 on reader service card*

## Other literature

**Dome system.** Varax domes are constructed of curved laminated rib members, laminated purlins, 2-in. T&G decking and steel connecting hubs and perimeter tension ring. Normally roofed with fiberglass and bitumen and layered on the inside with 3 in. of fiberglass acoustic material, the dome can span a 40 ft pool or a 700 ft coliseum. Full-color design brochure is

available from Unadilla Laminated Products, or Western Wood Structures.  
*Circle 215 on reader service card*

**Replacement windows.** 16-page catalog illustrates and describes residential, light commercial, and high performance windows, gives abbreviated specifications, cross sectional detailed drawings and features gothic and circle top windows with operating top sashes. It also gives details of panning systems and illustrates the stacking and joining systems that permit installation of multiple units in large window openings. Season-all Industries, Inc.  
*Circle 216 on reader service card*

**'Using Gypsum Board for Walls and Ceilings'** is a 36-page publication describing the different kinds of gypsum wallboard and their uses. It covers the composition of the various boards as well as the correct methods of handling and installation. It contains many diagrams and photographs and explains basic drywall jargon in its glossary. Gypsum Association.  
*Circle 217 on reader service card*

**Castors/floor protection products.** 22-page catalog gives specifications on spherical and wheel casters, glides, plastic and rubber tips and corner brackets for furniture and equipment. Included is how to select and specify products for a variety of industrial, institutional, and materials handling purposes. Shepherd Products US, Inc.  
*Circle 218 on reader service card*

**Graphics files.** The 32-page color brochure illustrates the many and varied products designed for filing and storing sheet graphics vertically and rolled. Drafting and drawing tables and accessories are included, color choices are shown. Plan Hold.  
*Circle 219 on reader service card*

**Carpet cushion.** Fact folder describes the advantages of separate carpet cushion. It describes the various types of cushioning material, includes guide specifications, technical data, and tells how to select type of cushion for various applications. Ludlow Corporation.  
*Circle 220 on reader service card*

**Park and playground equipment.** Catalog offers wide variety of products, ranging from wood and metal playground equipment to therapeutic equipment, recreation vehicles, and wood buildings and shelters. Full-color book covers 20 different product categories. Included is a wood and metal physical fitness course for adults and children. Game Time, Inc.  
*Circle 221 on reader service card*

**Retrofit glazing system** for converting single-glazed windows of existing commercial buildings into high-performance units is available. Four-page product data booklet gives performance and appearance characteristics of the new glazing system. "A New System For Energy-Efficient Windows," may be obtained from PPG Industries.  
*Circle 222 on reader service card*

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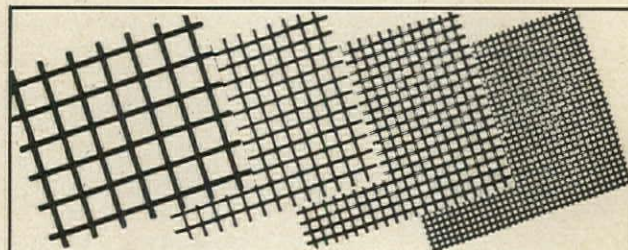


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Circle No. 360, on Reader Service Card

Bldg. materials cont'd from page 8

Computer system: Liskey. Passenger and observation elevators (standard and special): Otis Elevator. Escalators: Otis Elevator. Electric distribution: Square D Co. Guest room toilets: Norris Industries. Toilets, tubs, and lavatories: American Standard. Flush valves for lavatories: North Hollywood Marble. Sprinklers: Kenneth Fraser Co. Heating and air conditioning: Central Plants Inc.

**Detroit Plaza Hotel, Renaissance Center, Detroit, Mi (p. 57).** Architect: John Portman & Associates, Atlanta, Ga. Caisson foundations: Caisson Corp. Steel frame: American Bridge. Metal deck: H.H. Robertson. Concrete reinforcement: Re-steel Center Corp. and U.S. Steel. Concrete frame: Mayfair Construction Co. (concrete); Penn-Dixie (cement). Curtainwall (aluminum and glass): PPG. Drywall: Cupples (office buildings). Ceramic tile floors: U.S. Ceramic Tile Co. Quarry tile: Summitville. Carpeting: Brintons, Stratton, Lees Carpets, Gulistan. Elastomeric roofing: 3M. Spray-on insulation: W.R. Grace. Rigid polystyrene insulation: Dow Chemical. Insulation: U.S. Thermafibre (acoustical); Owens Corning Fiberglas (thermal). Acoustical ceiling: Owens-Corning Sonoflex. Solid core wood doors: U.S. Plywood. Steel roll-up doors: Kinneer. Elevator (special and standard): Otis Elevator. Aluminum and glass storefront doors: Amarlite. Revolving doors: International Steel Co. Locksets: Yale. Door closers: LCN. Hinges: Stanley. Panic exits: Yale. Interior paints: Duraco. Kitchen: Western Service & Supply Co. Laundry and dry cleaning: Barring Industries. Music: Universal Laboratories. Computers: Liskey Architectural Systems. Escalators: Otis Elevator Co. Rotating platforms: Macton. Electric distribution: General Electric Co. Tub/shower and lavatory units: Owens-Corning Fiberglas. Plumbing: Grinnell Co. Heating and cooling plants: York Corp. (air handling units and chillers); Erie City (boilers).

## Notices

### Appointments

Gary Felix Spears has joined Rees Associates, Inc., Oklahoma City.

Stanley G. Boles, Peter F. Daniels, and Michael J. Myles have been elected associates of Broome, Oringdolph, O'Toole, Rudolf & Associates, Portland, Or.

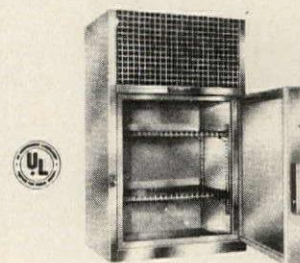
Peter Gray Scott, Donald Kasamoto, and Syed Husain, AIA have been named principals in Ratcliff, Slama & Cadwalader, Berkeley, Ca.

Jack Bing Wah Ken, AIA has been appointed an associate of Anshen & Allen, San Francisco.

Sandra Weeks, Ralph E. Dinneen, and William A. Sterling have been appointed vice presidents of Professional Designs, Inc., Boston.

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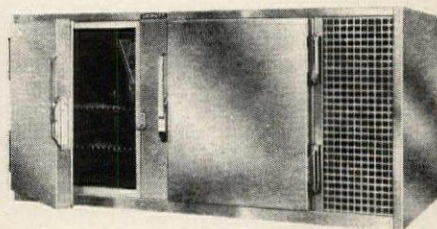
WM-2-CW Capacity—2.3 cu. ft. (65 ltr.)

WM-3-CW Capacity—3.2 cu. ft. (95 ltr.)

WM-4-CW Capacity—4.3 cu. ft. (125 ltr.)

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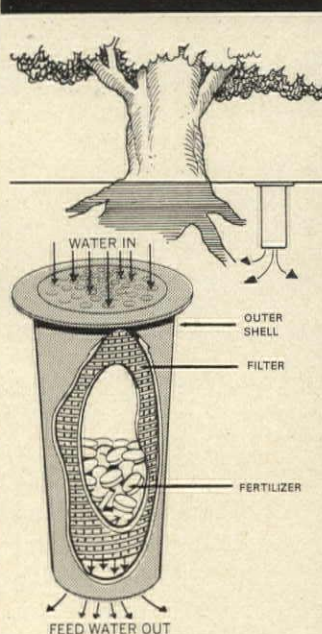
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